UMASS/AMHERST
312066 0270 8067 6

MASS EA1.4: 11

ENVIRONMENTAL RESOURCE

Government Documents
Co'lection
MAR 5 - 1974
U [illegible]

Massachusetts Department of Natural Resources Arthur W. Brownell, Commissioner Jan. — Feb 1974 Number Eleven

WHO WILL SAVE THE FISHES?

Commercial fishing, the Commonwealth's oldest industry, is in trouble. Stocks of commercially important fish continue to decline. Foreign competition for both fish stocks and markets has increased, while domestic fishing fleets have deteriorated and become antiquated. In recent years the Northwest Atlantic — particularly Georges Bank, extending 50 to 200 miles off Nantucket — has been so over-fished that marine resources are dwindling. Haddock stocks, once the mainstay of the Massachusetts fishing industry, have been declared a resource disaster by the federal government. Herring and yellowtail flounder fisheries are depressed and other species such as cod, mackerel and lobsters are threatened.

Because of the absence of effective international controls on fishing in the Northwest Atlantic, a bill has been proposed in Congress which would conserve coastal fisheries and protect the domestic fishing industry. This bill, the "Interim Fisheries Zone Extension and Management Act of 1973," would extend, on an interim basis only, U.S. fisheries jurisdiction from 12 to 200 miles off our coast. It would terminate when an international agreement was reached that would insure enforcement of fisheries conservation in these waters. The following remarks were made by Frank Grice, Director of Marine Fisheries in Massachusetts, testifying before the U.S. Senate Commerce Committee on behalf of this bill.

As a former biologist and present administrator of the Commonwealth's Marine Fisheries Agency, I have long believed in regional resource management. More than 20 years ago, as a graduate student in fisheries biology, I learned the difference between sustained yield and over-fishing. Perhaps I am still too idealistic; but I cannot bring myself to condone the senseless over-exploitation of a living, renewable resource without regard to the protein needs of future generations.

It is painfully evident that an ecological crisis involving all important commercial fish species in the Northwest Atlantic is upon us. In less than ten years, the fantastically abundant fishery resources off the New England coast have been drastically over-fished by a multitude of foreign nations whose vessels ignore their own depleted waters in their rush to exploit what New Englanders have cared for since the beginning of our nation.

What has been the official reaction to this conservation crime? Until two years ago, hardly anyone in Washington or the federal fisheries establishment would publically admit that a serious problem existed or that the International Commission for Northwest Atlantic Fisheries, otherwise known as ICNAF, was incapable of carrying out its responsibility to "Protect and con-

Photo Credit Mass. Department of Commerce and Development

Publication of this Document Approved by Alfred C. Holland, State Purchasing Agent
5M-2-74-082629 Est Cost Per Copy $.085

serve the fisheries of the Northwest Atlantic Ocean in order to make possible the maintenance of a maximum sustained catch from these fisheries."

It is a travesty that ICNAF, rather than promoting wise use of marine resources, has instead lulled the general public, the Administration and Congress into a false sense of security while the fisheries were being over-exploited.

Recently, because of the threat of unilateral action by Canada and the U.S., ICNAF has adopted a number of rational regulations. However, regulations are only as good as the determination to effectively enforce them. Until the ICNAF member nations respond to their treaty obligations with regard to research, statistics, surveillance and enforcement, their recent conservation stance should be highly suspect.

The most frustrating aspect of this fishery problem is the realization that interests other than fisheries have prevented our government from accepting an effective leadership role. We are constantly reminded of the need to preserve free passage of warships through straights, free airspace and free navigation for commerce with the implication that any extension of fisheries jurisdiction, no matter how temporary or how necessary for conservation purposes, would jeopardize these other interests. Yet, it is strange that the much more sweeping and arbitrary declaration of ownership of all the seabed resources of the Continental Shelf and even beyond, as embodied in the Truman Proclamation of 1945, has not been similarly criticized as detrimental to national interests.

Codfish: A threatened species

How can this double standard of resource jurisdiction be logically defended? In the long-run, is the ownership and exploitation of finite non-renewable mineral resources more important than the perpetuation of renewable protein resources that need only proper stewardship in order to continue to benefit man?

No one in the fisheries field is advocating an extension of total territorial rights or other controls that would affect freedom of navigation. Nor do we foresee the abolishment of foreign vessels off our coast if and when extended fisheries jurisdiction is achieved.

But what we must have is management control: the right to regulate the catch so that no species is over-exploited and thus, pushed to the edge of extinction. Hopefully this kind of management control will be forthcoming at the Law of the Sea Convention which convenes this spring in Caracas, Venezuela. But we desperately fear that before such a regime is ratified by the nations of the world — a ratification that might take several years to achieve — our marine resources will be ravished beyond recovery.

Today we are on the brink of an energy crisis brought on largely by the squandering and mismanagement of petroleum resources throughout the developed world. Will we face a comparable food crisis because of our lack of stewardship of the protein resources of the seas? Or will we, as responsible citizens of the world, do what must be done and save the international community from its lack of conservation awareness?

In 1971, Governor Francis Sargent impressed by the urgent need for a solution to the fishery resources problem, warned: "It is imperative that we reach international agreement on the management and allocation of high seas fisheries. If not, the issue becomes irrelevant because there will be no fish resource to preserve — no fish industry to protect."

Unfortunately two years later, we still have neither adequate international control or any national jurisdiction over the Continental Shelf fishery resources. Even the landmark agreements hammered out at the last ICNAF meetings will not begin to reverse the over-fishing and allow for a gradual rebuilding of the stocks until 1975 or 1976 — and that is assuming strict adherence by all fishing nations.

The fact is the vast fishing power now directed at the Atlantic Coast fisheries is not declining. New, larger and more efficient fishing machines are constantly being added and foreign vessels which would be considered modern by New England standards are being phased out.

Our fishermen are not competing against Soviet or Polish or Rumanian or East German fishermen. Rather, they are — with only a trickle of federal aid — competing directly against nationally owned or heavily subsidized fleets directed by national policies. These policies, which are indifferent to any conservation practices, insist on increased protein production from the seas regardless of where it exists.

Meanwhile we, in official capacities, continue to negotiate, wring our hands, tell our fishermen to be patient, spend millions of dollars to document the drastic decline of these protein resources and try to insist that our own industry adopt conservation practices. For what purpose — to save the resource only to have it further exploited by foreign fleets?

Is this nation so hung up on total freedom of the seas that we will continue to condone this senseless waste? Or will we, as a people, regain our ecological concern — once an article of faith for Americans — and do something? We can do something. All of us can help save the fish by urging Congress to pass the Interim Fisheries Zone Extension and Management Act of 1973.

EPA established an interim joint permit authority, some 38 permits have been issued on 19 oil terminals, two major power plants and 17 cooling water discharges.

Following a policy to establish uniform and rational effluent standards, we are currently scheduling permit issuance on an industry by industry basis. In the paper and pulp category, the first in which effluent limitations have been set, 45 paper mill permits have been drafted. The next category scheduled will be textiles to be followed then by some 85 plating and metal finishing permits. Even now, thanks in large part to the state's water pollution control program in effect since 1967, more than 400 out of some 800 Massachusetts industries in the Commonwealth required to have permits under the new law already provide treatment of their wastewater.

The same situation, however, does not prevail in the area of municipal wastewater treatment. Here an avalanche of federal guidelines on user charges, industrial cost recovery, pre-treatment, cost effectiveness, best available technology, infiltration-inflow, public participation, municipal facilities planning — to name just a few — have virtually halted any progress in municipal treatment works construction.

While many of the new regulations make good engineering sense, the transition to the new law will require a second round of town meeting authorizations, additional engineering studies and further design work so that treatment facilities will meet the new requirements. One particular grant prerequisite — the infiltration-inflow study requirement — has placed in limbo many municipal waste treatment projects well in the works until more detailed analysis and evaluation are conducted. These additional studies could take up to three years to complete before a municipal grant can be approved.

The sad fact is that much of this paper work generated by the federal act is unnecessary and contrary to the very law itself. For the federal act states:

"It is the national policy that to the maximum extent possible the procedures utilized for implementing this Act shall encourage the drastic minimization of paper work and interagency decision procedure, and the best use of available manpower and funds, so as to prevent needless duplication and unnecessary delays at all levels of government."

Compounding the problems of paperwork are politics at the federal level. On the one hand Congress has passed a strong comprehensive water law authorizing vast sums of money to aid municipalities in establishing wastewater treatment projects.

On the other hand, the Administration, through the Office of Management and Budget, has impounded a sizable portion of the funds Congress authorized. Caught in the middle, the U.S. Environmental Protection Agency is trying to carry out the mandate of the law, while watching the national municipal construction program reduced to virtually nothing because of funding restrictions as well as inflexible regulations and guidelines.

Thus, if the water pollution control program, envisaged by Congress is to succeed, major revisions in the administration of the law and the law itself will have to be made. What is specifically needed is a streamlined municipal construction grant program without impoundments and budgetary restrictions. In the meantime, while the Massachusetts Clean Waters Act will assist to some degree in moving water pollution control ahead in this state, municipalities, industries and the Commonwealth are going to have to face a difficult transitional period for some time to come.

NEW LIFE FOR DEAD WOOD

One way of taking some of the chill out of your home during the energy shortage is to burn wood. Burning wood in a fireplace or Franklin stove — if you are lucky enough to own one — can stretch the fuel dollar. Wood also burns cleanly, giving off less irritating pollutants than most fuels. Its ash waste is minimal and can be used later as fertilizer in gardening.

But since the fuel crisis, firewood has become harder — and therefore more expensive — to come by. In response to this increased demand, the Department of Natural Resources recently opened the state's forest and park lands to the public. Under the Cut-A-Cord Program, people may cut and pick up dead wood and haul it out of the Commonwealth's forests.

A two dollar permit enables a person to pick up a cord of dead wood, enough to fill 16 car trunks of wood. (A cord of wood makes a pile eight feet long, four feet wide and four feet high.) Heat-wise a cord of wood is equivalent to 150 gallons of fuel oil. On a pound for pound basis, heavy hardwoods, the most suitable woods for home burning, have one-third the heating value of oil and about half that of coal.

A few helpful hints for cutting and storing firewood: Cut dead wood rather than live or green wood. (Cutting live wood is prohibited in state forests.) Green wood will not burn until dried for several months. It is preferable to cut with a bow-saw rather than an axe. Chainsaws are hazardous and should be handled with extreme caution. Cutting and lifting wood is strenuous. Be sure you are in shape. If you're not, it might be better to shell out anywheres from $30 to $120 per cord, the going rates for having stove-length wood delivered to your home.

Since wood could be infested with insects, it's better to store it outside. If possible, place wood off the ground and cover it with rain-proof material such as plastic, boards or roofing paper. Splitting wood six inches or more in diameter speeds up the drying.

It helps to know wood species. Hickory, Oak, Beech, Maple and Ash are woods commonly found in Massachusetts that burn long and steadily. White Pine makes good kindling for starting a fire, but doesn't last long. Pitch Pine, because of its pitch content, is fairly good. Hemlock, Spruce, Juniper, Larch and Chestnut tend to throw out sparks and should be used with caution in fireplaces.

organize a comprehensive coastal zone program, steps can be taken to beef up coastal zone management. A Departmental survey has shown that the state is already heavily involved in this management through such existing statutes as the Wetlands Protection Act, Coastal Wetlands Act, Massachusetts Environmental Policy Act, Scenic Rivers Act and ocean sanctuary laws. Just a little better coordination of these laws would go a long way in protecting and managing development of our coastal resources.

Arthur W. Brownell

POLITICS, PAPERWORK AND POLLUTION CONTROL

By Thomas C. McMahon
Director, Division of Water Pollution Control

The passage of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500) introduced a new philosophy and approach to nationwide water pollution control, but it added a number of obstacles as well. While the new law is one of the most ambitious and loftiest pieces of environmental legislation ever passed, at the same time it is one of the most complex and difficult to get on track. Major adjustments on the part of municipalities, industries and the Commonwealth will be necessary to implement the law.

The following are some of the more important features of the new bill as they affect both industry and public officials:

Municipalities and industries must now obtain permits to discharge wastewater into rivers, streams or the ocean. These permits require the discharger to meet certain effluent limitations (the levels of pollutants allowed to be discharged) or water quality standards, whichever are more stringent. The permits are currently being issued jointly by the U.S. Environmental Protection Agency and the Massachusetts Division of Water Pollution Control and are the primary means of enforcement against municipal and industrial violators.

Towns, cities or other political subdivisions may now receive federal grants covering 75 percent of the costs of constructing municipal wastewater treatment plants. However, no grants for the construction of municipal treatment plants will be approved unless it is demonstrated that the collection system (sewerage pipe network) discharging into the plant is not subject to excessive groundwater infiltration.

After June 30, 1974 no grants will be approved unless it is demonstrated that the treatment facilities proposed employ the best practicable waste treatment technology available and that the facilities will be designed to employ reclaiming or recycling of wastewater at a later date.

To conform to the new federal law, the Commonwealth passed the Massachusetts Clean Waters Act Amendments of 1973. Here are some of the salient features of this bill:

Criminal fines for violating water pollution laws are increased from $1000 per day to up to $25,000 per day; and civil penalties, up to $10,000 per day.

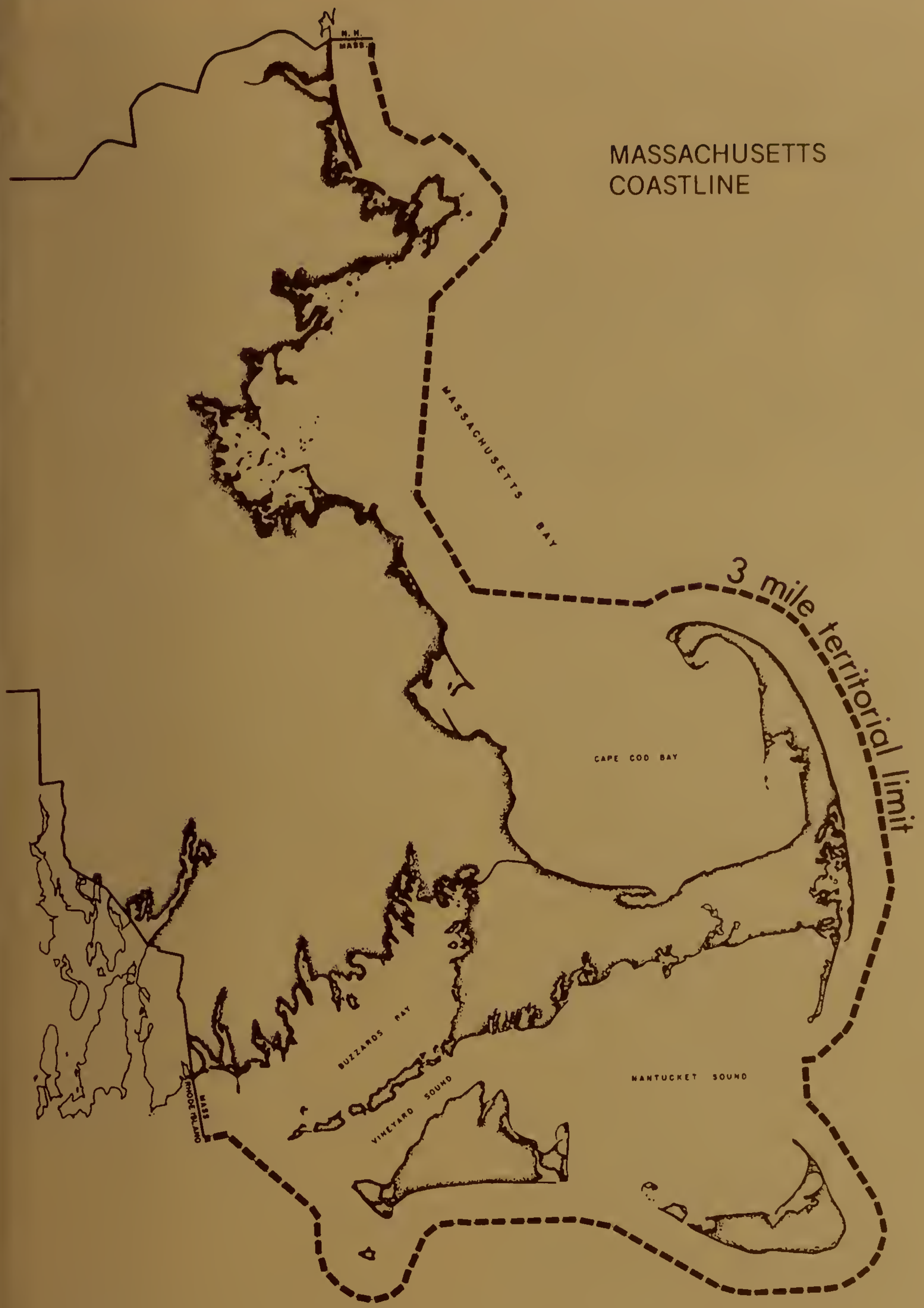
Two state bond issues, totalling $400 million have been reactivated, allowing the Commonwealth to pay grants to municipalities covering 15 percent of construction costs of wastewater treatment plants, so that federal-state grants now cover 90 percent of the costs of constructing treatment plants. (Under the old water pollution laws, federal-state grants paid communities up to only 80 percent of construction costs.) In addition state grants covering 90 percent of the costs of construction can be extended to projects under $5 million where federal funds are unavailable.

Retroactive payment of an additional 10 percent state funds on projects submitted after July 1, 1971 that receive 25 percent state grants (under the old law) are permitted to insure a combined total of 90 percent federal-state grants on these projects.

Projects approved by the Commonwealth and submitted to the EPA for a federal grant between October 18, 1972 and March 1, 1973 are eligible to receive state grants covering 90 percent of construction costs. This is an important provision. It overcomes a federal policy change that would have required industries well down the line in final planning to pay additional costs for tying into municipal treatment systems. Under the state provision, industries located in Holyoke, Chicopee, Pittsfield, Ware, Gloucester and the Hoosac Water Quality District, would be exempt from the stricter industrial pay-back provisions of the new federal law.

So far the transition from the old law to the new has been successful in Massachusetts' industrial sector. Since March 18, 1973, when WPC and

Water pollution abatement: Slowdown ahead?



COMMISSIONER'S CORNER:

MANAGING THE COASTAL AREA

With 1900 miles of coastline and 45,000 miles of coastal wetlands and estuaries, Massachusetts' coastal area is both vital and vulnerable to economic growth. Everything under the sun vies for this area's use: sport and commercial fishing, summer homes, marinas, shipping, oil storage and pipelines and ocean mining. Protection and proper use is essential if the area's finite resources are to sustain these disparate interests without needless sacrifice of one resource for another.

Now coastal zone management — which could put a handle on the situation — is in the offing for the Commonwealth. Under the federal Coastal Zone Management Act of 1972 (P.L. 92-583) Massachusetts may be in line to receive up to $250,000 a year for three years to develop a coastal land and water use program. And after that, an even greater amount may be made available for administering a Coastal Zone Program in the state.

As we see it now, several things could emerge from the program — a program that will be developed with citizens' participation. An organization could be established to service both the public and other government agencies with environmental and oceanographic information and analysis. It could also serve as a nexus between the state and the universities for administering coastal area research grants.

A coastal zone management organization could help prepare or review the environmental impact reports that are now being required for all federal and state projects. Or perhaps it could play a coordinating role, balancing the various interests in the coastal area. Particularly in light of New England's long-term energy needs, a coastal management organization will be essential for assessing the impact on the coastal environment of oil terminals, storage tanks, refineries and pipelines that are sure to be proposed in the coming months ahead.

Down the line, the coastal zone management program might include regulating ocean dumping, determining power plant sites and providing a framework for looking at inter-state problems like boundary disputes, fishing rights and seabed development.

One invaluable ecological aspect of coastal zone management, we envisage, would be to institute estuarine sanctuaries similar to the ocean sanctuary laws already on the books in Massachusetts. (These ocean sanctuary laws protect various offshore waters such as Cape Cod Bay and areas off Cape Cod National Seashore and the town of Manchester on the North Shore from any exploitation or development that could endanger the ecology or appearance of the ocean seabed.)

In fact, the federal Coastal Zone Management Act encourages the state to protect estuarines and contiguous lands by offering matching grants for acquisition of these areas. The estuaries would not merely be protected: they would serve as living laboratories for further research into the resources of this vital ecosystem.

In the interim, while working to

Make sure your chimney, fireplace or wood-burning stove is in good working condition. Don't leave a fireplace fire unattended without proper screening.

Remember the state's forests and parks are your lands. Destroy them and you destroy one of your most valuable renewable resources.

ON THE DOCKET

The following are major environmental bills either passed into law (P) or defeated (D) in the Massachusetts legislature last year.

ENVIRONMENTAL REORGANIZATION BILL (H6110) — Sponsored by Governor Sargent, this bill was by far the most important environmental legislation to come down the pike last year, or for that matter, any year. The bill called for sweeping consolidation of environmental responsibilities — now fragmented and scattered among four cabinet secretaries, seven major departments and 49 state agencies — under a single operating agency, the Department of Environmental Affairs. Principal agencies merged into the new Department would be the Departments of Natural Resources and Agriculture and the Metropolitan District Commission. Once the superagency is formed, five environmental districts would be established throughout the state. This alignment would decentralize delivery of environmental services and make state government more efficient and responsive to the needs of the people. D

FARMLAND ASSESSMENT ACT (Ch. 1118, Acts of 1973) — Two years ago a state constitutional amendment was passed by voters authorizing the Massachusetts General Court to enact legislation to relieve the tax burden on owners of farmlands. This legislation would tax farmland owners for the actual not potential use of the land, thus not only helping the small farmer to stay in business but also protecting open space from urban development as well. P

MASSACHUSETTS CLEAN WATERS ACT AMENDMENT (Ch. 546, Acts of 1973) — Brings the state law into conformity with the Federal Water Pollution Control Act Amendments of 1972, enabling the state to run the permit system for the discharge of municipal and industrial waste water. The bill's most important provision calls for the state to provide funding, which on top of federal grants, would cover 90 percent of the costs of constructing municipal treatment plants. In all ramifications the bill is essential for waging total war against water pollution. P

MINERAL RESOURCE BILLS (H653, H1230, H152) — Designed to conserve mineral resources and to prevent despoiling the landscape, these bills sought to establish state guidelines for land mineral extraction and site rehabilitation, and most specifically, reclamation of unsightly gravel pits. D

PHOSPHATE BILLS (H1227, H5484) — Called for a ban throughout the state on the sale of detergents containing phosphates. While not a complete ban (some phosphates would be permitted), the bill would have affected a number of detergents manufacturers selling in the state. D

NEPONSET RIVER BILL (H583) — Heavy pressure to develop the extensive floodplains and wetlands — vital conservation zones — of the Neponset watershed continues. Bill called for DNR and MDC to acquire land along the Neponset River to save wetlands from urban encroachment and develop them for recreation uses. A $2.5 million bond issue was proposed to fund this conservation-recreation program. D

SOLID WASTE BILL (Ch. 1217, Acts of 1973) — Authorizes the Commonwealth to lease state-owned lands and to enter into long term contracts with private companies to finance and build solid waste disposal facilities. The bill encourages private enterprise to play a greater role in development and management of solid waste disposal. P

WATER POLLUTION ABATEMENT DISTRICTS BILL (Ch. 1074, Acts of 1973) Authorizes the Division of Water Pollution Control to form water pollution abatement districts consisting of one or more communities. Municipalities are required to join districts and to prepare engineering plans for sewerage treatment facilities. P

WILDLIFE MANAGEMENT BILL (H5851) — Called for funding for the Division of Fisheries and Game to protect indigenous endangered species and manage nongame species such as songbirds, small mammals, amphibians and even reptiles. At present the Division manages game species such as pheasant, ducks, deer and bear. D

CONSERVATION RESTRICTIONS: NEW GAME IN TOWN

Under the Conservation Restriction Act (Chapter 666 of the Acts of 1969), communities, conservation commissions and quasi-public organizations have developed a new method for protecting open spaces. The act allows for the preservation of land through restrictions or easements, while not altering ownership. Conservation restrictions can range from outright purchase of development rights — under which arrangement the local government has the authority to develop the land in an appropriate manner, although the land is still privately owned — to simple easements across the land for public rights-of-way.

This method enables a community to protect property at considerably less than full-title purchase, and sometimes at no cost at all if the restriction is donated by the owner. Since the act's inception in 1969, 46 conservation restrictions in 30 communities totalling about 3,350 acres have been approved by the Commissioner of Natural Resources. In many cases the municipal conservation commission is the recipient of the restrictions. In the following list, the top six communities are ranked in order of acres of lands restricted through the Conservation Restriction Act.

Rank	Community	acres Restricted
1	Dalton	1900 acres
2	Stoughton	198
3	Dartmouth	198
4	Hamilton } *combined restriction*	170
5	Ipswich	
6	Sherborn	111

DIVISION DIRECTORS

CONSERVATION SERVICES	
Joel A. Lerner	727-3170
FORESTS AND PARKS	
Bruce S. Gullion	727-3180
LAW ENFORCEMENT	
Kenneth A. Crossman	727-3190
MARINE FISHERIES	
Frank Grice	727-3193
MINERAL RESOURCES	
Robert C. Blumberg	727-3193
WATER POLLUTION CONTROL	
Thomas C. McMahon	727-3855
WATER RESOURCES	
Charles F. Kennedy	727-3170

RESOURCE Published by
MASSACHUSETTS DEPARTMENT
OF NATURAL RESOURCES,
DIVISION OF CONSERVATION SERVICES
LEVERETT SALTONSTALL BUILDING
100 CAMBRIDGE STREET
BOSTON, MASS. 02202
DAVID KALES, Editor
LORRAINE A. AGRI, Graphics Coordinator
JACK WOOLNER, Photographer
JAMES E. HEALEY, Information & Publicity

MASS. EA1.4:12

ENVIRONMENTAL RESOURCE

Government Documents Collection
JUN 5 1974
University of Massachusetts

Massachusetts Department of Natural Resources Arthur W. Brownell, Commissioner April 1974 Number Twelve

SPECIAL ISSUE:

EXPLORING THE NATURAL RESOURCES FIELD

Where are all those jobs in environmental protection and conservation that were supposed to be available in the 70s — the environmental decade? Like everything else these days, environmental jobs are in short supply. But times are changing. Environmental problems are becoming so critical that sooner or later more manpower will have to be employed in the natural resources field: more manpower to manage forests and parks, conserve fish and wildlife, reduce air and water pollution and plan for a healthier, more attractive environment. In anticipation of better days ahead, the Department of Natural Resources has prepared this pamphlet to provide the public — particularly young people now contemplating a career — with information on state service in the natural resources field.

Information Please

State service positions in the natural resources field are tough to come by; for every job available there are a multitude of applicants. But this should not deter one from trying to land a job with the state. First thing to do is to become familiar with the Massachusetts Civil Service system. The vast majority of the state's **professional, semi-professional** and **supervisory positions** in natural resources are subject to Massachusetts Civil Service.

Under Civil Service procedure, applicants are required to take a written examination for a specific position. However, examinations are given only when a department has a vacancy for a specific position. After

Regional Forest and Park Supervisor: Monroe State Forest

Publication of this Document Approved by Alfred C. Holland, State Purchasing Agent
5M-3-74-082629 Est. Cost Per Copy $ .066

the examination, a Civil Service list is established, and remains in existence for two years. Hiring is done by a department from the Civil Service list. For information about the Massachusetts Civil Service system and examinations, contact:

Massachusetts Civil Service
Commission
294 Washington St.
Boston, Mass. 02108
Tel: (617) 727-2277

Unskilled and **semi-skilled positions** such as conservation helpers, conservation skilled helpers and tree climbers are also available in state service. These jobs constitute the basic work force of the Divisions of Forests and Parks, Marine Fisheries and Fisheries and Game. Since the Department of Natural Resources and its component divisions normally promote from their existing work force, this employment level, in many cases, is the first step up the ladder in a conservation career.

For those interested in unskilled or semi-skilled positions, the first thing to do is to fill out an application required by the Labor Bureau Division of Civil Service. No formal written examination is given. Qualified applicants are placed on appropriate lists on a first come, first served basis. (Veterans have preference.) When a vacant position exists, the Department draws from the list of qualified applicants. For further information, contact:

Labor Bureau Division
Massachusetts
Civil Service Commission
294 Washington St.
Boston, Mass. 02108
Tel: (617) 727-2294

Non-Civil Service year round positions exist in state service. The Department of Natural Resources, for example, operates a year round skating rink program. When a vacant non-Civil Service supervisory or labor position exists in the skating rink program, a list of prospective candidates is compiled from all available sources, interviews are conducted and a qualified applicant is selected.

The Department also hires a large number of **non-Civil Service seasonal employees.** Seasonal positions include Skate Guards (earning about $133 per week), Bath House Attendants or Matrons ($118/week), Conservation Helpers ($128/week) and Lifeguards ($128/week). Lifeguards must hold a Senior Red Cross Lifesaving Certificate (or equivalent) and a valid First Aid Certificate, in addition to being capable of passing a practical water safety test. Seasonal job candidates are selected from lists submitted by the Governor's Office for State Service.

For further information about both year round and seasonal non-Civil Service positions, contact:

Governor's Office for State Service
State House — Room 184
Boston, Mass. 02133
Tel: (617) 727-2795

For answers to any specific questions concerning employment in the Dept. of Natural Resources, contact:

Personnel Office
Department of Natural Resources
100 Cambridge St.
Boston, Mass. 02202
Tel: (617) 727-3164

STATE SERVICE IN NATURAL RESOURCES

State jobs in environmental protection and natural resources range from tree climbers to bio-sanitary engineers, conservation helpers to marine biologists — laborers in the field to administrators and planners in the office. Below is a general listing of state service positions in natural resources. Since state agencies such as the Department of Natural Resources normally promote from their ranks, the entrance level of professional, semi-professional and supervisory positions is stressed and then the career progression listed. It should be noted that all salaries in state service are regulated by the Commonwealth of Massachusetts Salary Schedule. When a person is employed by the Commonwealth, he is paid according to an established salary schedule for that position. On each anniversary date of his employment, an employee performing satisfactorily receives a pay step increase. Annual salaries listed here are approximate and range from the beginning step to the maximum salary step for the position.

FORESTS AND PARKS

Recreation	**Annual Salary ($)**
Job Title: Forest and Park Supervisor	$8400-10400

Description: Chief supervisor at small recreational area or assistant supervisor at large recreational area. Duties consist of supervising and maintaining recreational facilities and accommodating park visitors.

Qualifications: Four years experience in either forest management, recreation, park or wildlife management; or a bachelor's degree in one of above fields; or any combination of formal education and work experience adding up to four years in one of the above fields.

Career Progression:

Senior Forest and Park Supervisor	$9600-11700
Assistant Regional Forest and Park Supervisor	$12300-15600
Regional Forest and Park Supervisor	$13800-17200
Asst. Chief of Recreation	$13000-16500
Chief of Recreation	$15400-19500

Skating Rink Program

Job Title: Head Skate Guard $7200-8700

Description: Assist in overall management of state-operated skating facility. Supervise employees, deal with general public and perform other administrative tasks.

Qualifications: Ability to supervise large recreational complex.

Career Progression:

Assistant Supervisor of Recreational Facilities	$8900-11000
Superintendent of Recreational Facilities	$10800-13600
District Supervisor, Skating Rinks and Swimming Pools	$12300-15600
Supervisor, Skating Rinks and Swimming Pools	$13000-16500

Forest Fire Service

Job Title: Forest Fire Patrolman $7600-9300

Description: Involved in forest fire prevention, detection and suppression.

Qualifications: Knowledge of forest fire prevention and suppression methods, practices and equipment; and ability to perform strenuous physical labor.

Career Progression:

District Fire Warden	$9600-11700
Assistant Regional Forest and Park Supervisor	$12300-15600
Regional Forest and Park Supervisor	$13800-17200
Chief Fire Warden	$13000-16500

Insect Pest Control

Job Title: Specialist Foreman — Insect Pest Control $8000-9800

Description: Provide pest control services including tree removal, pruning and spraying as well as promotion of improved methods of insect pest suppression.

Qualifications: Three years experience in the supervision and/or operation of tree removal crews; formalized aboriculture study can be substituted for two of the three years of experience.

Career Progression:

District Supervisor	$9600-11700
Assistant Regional Forest	

Forest and Park Supervisor: managing a state park

and Park Supervisor	$12300-15600
Regional Forest and Park Supervisor	$13800-17200
Chief of Insect Pest Control	$13000-16500

Forestry

Job Title: Forester $10800-13600

Description: Manage forest land resources. Work includes reforestation supervision, timber cutting assistance, forest research and education.

Qualifications: Five years experience in forest management; or bachelor's degree in forest management plus one year of professional experience.

Career Progression: Assistant Regional Forest

and Park Supervisor	$12300-15600
Regional Forest and Park Supervisor	$13800-17200
Chief Forester	$13000-16500

Forest & Park — Marine Fisheries — Fisheries & Game Basic Work Force (year round)

Job Title: Conservation Helper $6600-7900

Description: Perform primarily physical labor with the majority of tasks involved in the maintenance of bath houses, parking areas, campsites, sewerage systems. Other tasks include forest road repair, culvert and drain clearing and the care of trees and shrubs. Work may also include forest fire fighting and assisting in fish and wildlife improvement programs.

Qualifications: Capable of performing physical labor. No formal qualifications required. Candidates are selected from the Massachusetts Civil Service Labor Bureau lists.

Career Progression: Conservation

Skilled Helper	$6900-8300
Tree Climber	$7200-8700
Supervisory positions in Forests & Parks, Marine Fisheries or Fisheries & Game	(See above for supervisory positions and salaries.)

WATER POLLUTION CONTROL

Job Title: Junior Sanitary Engineer $10800-13600

Description: Assist in conducting surveys in sewage disposal systems; investigate sewage treatment facilities and follow up on prescribed corrective measures; undertake field tests of water samples; conduct laboratory tests on water and sewage; determine engineering calculations relating to stream flow, plant and other hydraulics; compile and compute engineering data relating to sewage treatment facilities.

Qualifications: Four years experience in sanitary, civil or chemical engineering; or bachelor's degree in chemical, environmental or sanitary engineering.

Career Progression: Assistant

Sanitary Engineer	$12300-15600
Senior Sanitary Engineer	$13800-17200
Principal Sanitary Engineer	$15400-19500
Associate Sanitary Engineer	$18000-22800
Supervising Sanitary Engineer	$19600-25000

CONSERVATION SERVICES

Job Title: Senior Right of Way Agent $11500-14600

Description: Work includes assisting municipal conservation commissions in their efforts to acquire and preserve open space; administering federal grant program to help the Commonwealth and municipalities acquire outdoor recreation land; and managing the state's wetlands programs.

Qualifications: Four years experience in natural resource management or landuse control; or bachelor's degree in forestry, natural resources, park management, landscape architecture, environmental or biological science, recreation, government, public or business administration, law or civil engineering.

Career Progression: Landuse

Administrator	$12300-15600
Principal Right of Way Agent	$13800-17200

LAW ENFORCEMENT

Job Title: Natural Resource Officer $10200-12700

Description: Enforce all hunting, fishing and trapping regulations as well as all laws relating to, forests, forest fires and the operation of motorboats and snowmobiles. NROs also investigate wetland violations, water pollution complaints and oil spills.

Qualifications: Open to all persons meeting age and physical requirements.

Career Progression: Supervising Natural

Resource Officer	$12300-15600
Assistant Director	$13800-17200

PLANNING

Job Title: Resource Planner $13000-16500

Description: The job may be park, recreation, water pollution control or water resources planning. But all planning involves the same basic function; developing plans for future allocation and protection of natural resources. Depending on the kind of planning, work entails conducting inventories of recreation lands or water resources; or surveying water quality or lands for park development, determining landuse capability; and preparing conservation or park plans.

Qualifications: Six years professional experience in resource planning, engineering or development. An associate degree may be substituted for two years experience, bachelor's degree for four years experience or master's degree for five years experience in one of the following areas: natural resources conservation, natural resources planning, forestry, biology, renewable natural resources, outdoor recreation planning, wildlife management, government, economics, landscape architecture, environmental engineering, regional or urban planning, water resources engineering, water resources planning, geology or hydrology.

Career Progression: Principal

Planner	$14600-18500
Associate Planner	$16200-20700
Chief Planner	$18000-22800

Conservation Helper: building a forest access road

Photo Credit: Division of Fisheries & Game

Conservation Helper assisting in pheasant release program

Islands and Martha's Vineyard provide students with opportunities for lab and field experience. Intensive courses in Marine Biology offered in summer.

Springfield College, Springfield — B.A. in Environmental Studies offered, giving students broad background in sciences and social sciences. Program prepares students for careers in environmental education, planning and management.

Suffolk University, Boston — Biology Department offers Affiliated Cooperative Program in Environmental Technology, leading to B.S. in Biology. Guided by faculty advisors, students are employed in government or private agencies for two, six-month periods. Suffolk's 18-acre Cobscook Bay Laboratory in Edmunds, Maine offers field experience in marine environment.

Tufts University, Medford — For students interested in sanitary or public health engineering, the Environmental Health Engineering Program stresses environmental aspects of civil engineering, especially water and pesticides problems. The program offers a Civil Engineering Degree. Another program, Environmental Studies Program, providing students with both an engineering and liberal arts background, offers a B.S. in Engineering.

University of Massachusetts, Amherst — College of Food and Natural Resources offers degree programs in entomology, environmental design, fisheries biology, forestry, natural resource economics, wildlife biology, wood science and technology, plant and soil sciences, as well as a general non-professional program in Natural Resources Studies. Students majoring in forestry may choose from six optional programs: general forestry, forest business management, environmental-urban forestry, forest recreation, forest biology and forest hydrology. The Department of Public Health offers a degree in Environmental Health. For practical experience students may hook into various research and extension programs such as the Cooperative Wildlife Research Unit, Cooperative Fishery Unit and Water Resources Research Center.

Williams College, Williamstown — School's Center for Environmental Studies coordinates programs providing students with a liberal arts perspective to environmental issues. Students may use facilities of the Environmental Analysis Laboratory and the Environmental Documents Library as well as the Hopkins Memorial Forest for course work and individual projects.

Worcester Polytechnic Institute, Worcester — Interdepartmental program combining civil engineering and life sciences (biology, botany, etc.) offered. Students encouraged to work as teams on actual engineering problems. Engineering degrees, but no specialized environmental degrees, offered.

Community Colleges

(Associate Degree Programs — two years)

Most colleges listed below emphasize a vocational approach to environmental protection and natural resource conservation. Stress is on the training of technologists and technicians. After two years of training, students receive an associate degree and may continue education at a four-year college. Demand for technologists and technicians in the fields of air and water quality control, solid waste disposal and industrial waste treatment is growing with the enactment of new, more stringent environmental legislation.

Berkshire Community College, Pittsfield — Environmental Studies Program emphasizes conservation principles of ecosystems, recreation management, water quality control and wildlife. Classroom and laboratory supplemented by field work with local businesses and industries prepare students as technologists.

Bristol Community College, Fall River — Environmental Management Program trains technical engineers in designing and improving methods and equipment for pollution control.

Bunker Hill Community College, Charlestown — Fire Science Technology Program offered for those interested in careers in fire control.

Greenfield Community College, Greenfield — Environmental Science prepares technicians in landuse planning.

Holyoke Community College, Holyoke — Natural Resources option emphasizes public health problems such as water and milk quality.

Massasoit Community College, Brockton — Fire Science Technology offered.

Northern Essex Community College, Haverhill — Environmental Technology Program trains technologists as generalists in such areas as wastewater treatment, sanitation and industrial waste. Training includes biology and chemistry courses enabling students to conduct tests, measure samples and analyze and offer solutions to various environmental problems.

North Shore Community College, Beverly — Programs in Public Environmental Health Technology and Public Health Sanitation offered.

Quinsigamond Community College, Worcester — Environmental Technology, Pollution Abatement Technology and Fire Science Technology offered.

Springfield Technical Community College, Springfield — Para-professional program in Environmental and Process Engineering offered, training students in air and water quality control and wastewater treatment.

Stockbridge School of Agriculture, Amherst — Affiliated with University of Massachusetts. Associate Degree in Environmental Technology offered.

DIVISION DIRECTORS

CONSERVATION SERVICES	
Joel A. Lerner	727-3170
FORESTS AND PARKS	
Bruce S. Gullion	727-3180
LAW ENFORCEMENT	
Kenneth A. Crossman	727-3190
MARINE FISHERIES	
Frank Grice	727-3193
MINERAL RESOURCES	
Robert C. Blumberg	727-3193
WATER POLLUTION CONTROL	
Thomas C. McMahon	727-3855
WATER RESOURCES	
Charles F. Kennedy	727-3170

RESOURCE Published by
MASSACHUSETTS DEPARTMENT
OF NATURAL RESOURCES,
DIVISION OF CONSERVATION SERVICES
LEVERETT SALTONSTALL BUILDING
100 CAMBRIDGE STREET
BOSTON, MASS. 02202
DAVID KALES, Editor
LORRAINE A. AGRI, Graphics Coordinator
JACK WOOLNER, Photographer
JAMES E. HEALEY, Information & Publicity
LUCILLE M. SHEEHAN, Editorial Assistant
SPECIAL ADVISORS:
JOSEPH H. BROWN, Deputy Commissioner
DAVID L. HALL, Assistant to the Commissioner

Marine Fisheries Biologists: stocking and managing programs to protect and improve fisheries

WHERE TO PREPARE FOR ENVIRONMENTAL CAREERS

The following is a listing of colleges and universities in Massachusetts offering undergraduate environmental programs or degrees. If interested in state service, it is advised to check carefully the exact nature of the degree offered. Academic qualifications for state service are quite specific. Civil Service does not recognize all degrees in environmental studies.

Colleges and Universities
(Bachelor's degree programs — four years)

Boston College, Boston — B.C.'s Environmental Center coordinates efforts of various departments for students concentrating in environmental studies within their department. No specific degree program is offered.

Bridgewater State College, Bridgewater — Cooperative effort of different departments prepares students for graduate study or professional employment in oceanography. Degree in Oceanography offered.

Clark University, Worcester — Interdisciplinary study offered emphasizing assessment of technology in contemporary society. No specific degree offered.

Framingham State College, Framingham — Concentration in wildlife biology leads to careers in education or graduate study in biology. Degree in Biology offered.

Hampshire College, Amherst — Students work on choice of projects, combining fieldwork with lectures and seminars in ecology. No formal degree-granting program offered in environmental studies. Opportunity to practice skills by working on one of the campus farms or forest borders; or studying a local community's problems of wastewater treatment or landuse planning.

Massachusetts Institute of Technology (M.I.T.), Cambridge — The Interdisciplinary Environmental Council (I.E.C.) oversees environmental educational and research activities. Although no separate undergraduate degree in environmental studies is awarded, the Department of Civil Engineering offers an Environmental Engineering Program. Other departments offer educational and research opportunities in specific aspects of the environment relating to their own disciplines. Using the resources of the Environmental and Energy Laboratories, students are encouraged to develop their own environmental programs.

Massachusetts Maritime Academy, Buzzards Bay — Degrees offered in oceanography, fisheries science and ocean engineering. Students work on local ocean projects.

Northeastern University, Boston — New part-time eight year evening school offers Environmental Control Technology, leading to B.S. in Engineering Technology. In the first four years, basic sciences are emphasized while in final four years, students apply mathematical methods in engineering science to solve problems of environmental control. Students may elect to receive an associate degree after four years. The Civil Engineering Department allows students to dig more deeply into the environmental area, but does not offer a separate degree. Cooperative jobs are available with environmental agencies and private businesses to students majoring in biology earth sciences as well as liberal arts.

Southeastern Massachusetts University, North Dartmouth — Courses in Marine biology Coastal Zone Environments and Ocean Engineering offered by the Departments of Biology and Electrical Engineering. Specialized laboratories on campus, a fully-equipped 64-foot motor vessel and marine habitats in nearby Buzzards Bay, Rhode Island Sound, Elizabeth

Photo Credit. Division of Fisheries & Game

Aquatic Biologists working in the warm water restoration and management program

Water Pollution Control engineers conducting water quality tests

ENGINEERING

Job Title: Junior Civil Engineer $10800-13600

Description: In the case of water resources engineers, work involves reviewing project plans, conducting site inspections and computing hydrology calculations to insure that construction and development will not create flood hazards. In the case of park engineers work involves design and construction of facilities and roads in state parks.

Qualifications: Four years experience in civil engineering field; or bachelor's degree in civil engineering.

Career Progression:

Assistant Civil Engineer	$12300-15600
Senior Civil Engineer	$13800-17200
Principal Civil Engineer	$15400-19500
Associate Civil Engineer	$18000-22800
Supervising Civil Engineer	$19600-25000

MARINE FISHERIES

Job Title: Assistant Marine Fisheries Biologist $9600-11700

Description: Involved in fish management, fish culture administration and research. Research includes estuarine surveying; investigation of spawning activities, distribution and migration trends of fish; evaluation of effects of oil spills on growth and survival of shellfish and finfish; and calculation of the impact of thermal discharges on marine life.

Qualifications: Four years experience in a professional or technical capacity in the field of marine biology; or bachelor's degree in a biological science.

Career Progression:

Marine Fisheries Biologist	$10800-13600
Research Analyst	$11500-14600
Assistant Director	$15400-19500

FISHERIES & GAME

Job Title: Fisheries Manager $8900-11000

Description: Involved in fish management, distribution, fish culture, administration, research, information and education and enforcement of fish and game laws.

Qualifications: Five years experience in wildlife management; or bachelor's degree in fisheries or wildlife management, biology, zoology or forestry plus one years experience.

Career Progression:

Assistant Aquatic Biologist	$9600-11700
Aquatic Biologist	$11500-14600
Chief Aquatic Biologist	$13000-16500
District Wildlife Manager	$11500-14600

Job Title: Wildlife Restoration Field Agent $9600-11700

Description: Involved in wildlife management. Work entails providing food, water and cover for wildlife in order to maintain a proper balance between animals and other ecological interests. Also engaged in research, information and education and enforcement of fish and game laws.

Qualifications: Five years experience in wildlife management; or bachelor's degree in fisheries, biology, wildlife management, zoology or forestry plus one years experience.

Career Progression:

Assistant Game Biologist	$9600-11700
Game Biologist	$11500-14600
District Wildlife Manager	$11500-14600
Chief Game Biologist	$13000-16500
Chief of Wildlife Research	$13000-16500

ADMINISTRATION

Management

Job Title: Administrative Assistant $10200-12700

Description: General administrative duties: accounting, budgeting, personnel planning.

Qualifications: Four years experience in management; or bachelor's degree in accounting, business or public administration.

Natural Resource Officers: Operating on sea and land

Career Progression:

Senior Accountant	$11500-14600
Head Administrative Assistant	$12400-15600
Assistant to Commissioner for Fiscal Affairs	$15400-19500

Clerical

Job Title: Junior Clerk and Typist $5900-7100

Description: Clerical and secretarial functions.

Qualifications: Typing ability

Career Progression:

Junior Clerk and Stenographer	$6100-7300
Senior Clerk	$6600-7900
Senior Clerk and Stenographer	$6900-8300
Principal Clerk	$7600-9300
Head Clerk	$8400-10400

Natural Resource Officer: instructor as well as law enforcer

MASS. EA 1.4: 13

Governm Documents
Co on
JUL 1974

ENVIRONMENTAL RESOURCE

Massachusetts Department of Natural Resources   Arthur W. Brownell, Commissioner   May-June 1974   Number Thirteen

COMMISSIONER'S CORNER:

OUTDOOR RECREATION — A LOW ENERGY APPROACH

With sky-high gasoline prices and crowded trailer sites, camping, outdoor recreation or just "getting away from it all" in New Hampshire and Maine doesn't seem worth the trouble these days.

But discovering a wilderness experience, even for a day, does not have to require such a heavy expenditure in either fuel or human energy. There are outdoor recreational opportunities for Massachusetts residents more manageable, less expensive and just as satisfying closer to home.

The Berkshires, for example, are still relatively undiscovered to residents on Massachusetts' eastern seaboard (who tend to travel in a north-south, rather than east-west direction for their outdoor and vacation enjoyment). Yet the Berkshires' unspoiled natural beauty rivals some of the most scenic spots in Maine, Vermont and New Hampshire. The area is easily accessible by car via the Mass Turnpike and Rte 2; and during the week, campsites are usually available at state forests and parks like Mt. Greylock, October Mountain and Beartown, located throughout the region. (see listing)

Moreover, over 86,000 acres of the state's 232,000 acres of forest and park lands are located in the Berkshires. Of this total area, it is estimated that less than three percent of the land is intensively used for camping, hiking, fishing and other outdoor recreation. The rest of this landscape of mountains, valleys, streams and wetlands, much of which is criss-crossed by excellent trails, is lightly traveled, and in places solitary and undiscovered. DNR personnel at the region's park headquarters will provide maps and assistance to help people take fuller advantage of these lesser known areas.

To be sure, the Berkshires are still a good driving distance from urban population centers such as Boston, Worcester and Springfield. And these distances (three hours time from Boston) eat up the gas mileage. Bearing in mind that America's romance with the auto is clearly coming to an end, our Department is now considering the possibilities of public transportation from major metropolitan areas to some of the Commonwealth's best parks. We think this is feasible given the fact that on weekends, when traffic to the parks is heaviest, most urban transit companies have equipment and buses standing idle — and potentially available for public transport.

Public transportation to parks, though, remains an alternative for the future. What then are the low-energy outdoor opportunities close to urban centers available this summer?

October Mountain State Forest — Berkshires

Publication of this Document Approved by Alfred C. Holland, State Purchasing Agent
5M-5-74-D092667   Est. Cost Per Copy $ 086

The Department of Natural Resources operates several parks in or near urban areas (see listing). Two prime examples. Wompatuck State Park, located in Hingham only 17 miles from Boston and within walking distance to public transportation, has 400 camping sites and several trails for hiking, bike-riding and nature study. Borderlands, formerly the Oakes Ames estate, is located in Sharon and Easton, 35 miles from Boston. The park covers 1250 unspoiled acres of woodlands, ponds, cedar swamps, upland meadows, farms and the Ames mansion, offering a unique opportunity for both historical and cultural as well as natural experiences.

In the greater Boston area, the Metropolitan District Commission manages several forested and water-based parks, providing hiking, fishing, boating and swimming. Among the major areas: Middlesex Fells in the northeast section of metropolitan Boston; Blue Hills in the southeast section; Breakheart Reservation in Saugus and Wakefield; and Stony Brook in Boston.

Paradoxically, it is the parks in or near urban areas that in many instances are under utilized and offer the greatest potential for convenient, low-energy use. These parks have been generally taken for granted as ordinary open space and lack the public's full appreciation as to how they can be enjoyed.

One such example is Lowell-Dracut State Park, located in the highly urbanized Merrimack River Valley. Lowell-Dracut represents a typical New England landscape: woods, swamps, rocky outcroppings and open fields in the process of being reclaimed by second growth forests. It is this very typical character that holds a fascination for those wanting to expend less energy in trying to get from one destination to another, and, instead, take the time to look around.

Exploring the park, one follows ancient Indian trails; wanders past quarries which supplied granite for Lowell's canals and buildings; and comes upon such tell-tale remains of early American settlements as stone walls, cellar holes, house foundations and plow ridges.

The quiet observer will also be rewarded by an ecological tableau. Beaver Pond with a beaver dam, lodges and cuts attracts a community of wildlife to the area, including nesting birds, waterfowl, muskrats, foxes, raccoons and countless wood-boring insects feeding on the dead trees.

Beyond these possibilites for low-energy outdoor recreation is the most exciting project of all. This summer the Department plans to open up several islands in Boston Harbor for public recreation. Gallops Island will be developed for picnicking and hiking while Bumpkin and Grape Islands will have primitive camping.

While these islands will be accessible only by private boat transportation, by the beginning of the state's Bicentennial in 1975, the number of Harbor Islands in use should be expanded and serviced by public ferry transportation, and linked to other MDC and Boston-owned islands. In a few years the Harbor Islands, lying virtually at the doorstep of the largest population concentration in New England, should rank as one of the finest urban parks in the nation.

Arthur W. Brownell

THE BERKSHIRES — GO WEST YOUNG MAN

Bash Bish Falls State Forest, Mt. Washington, Rte 23 & 41; fishing, hiking, bridle paths

Pittsfield S.F., Pittsfield via West St.; camping, boating, swimming, fishing, hiking, bridle paths

East Mountain S.F.,Great Barrington, Rte 23; hiking, bridle paths

Taconic Trails S.F., Williamstown, Rte 2; hiking, bridle paths

Campbells Falls S.F., Southfield, Rte 272; fishing, hiking, bridle paths

Beartown S.F., Monterey, Rte 123 &102 S. Lee; camping, boating, swimming, fishing, hiking, bridle paths.

Sandisfield S.F., Sandisfield, Rte 57; boating, swimming, fishing, hiking, bridle paths, handicapped facilities

Cookson Property, New Marlborough, Rte 183; fishing, hiking, bridle paths

West Lake Recreation Area, Sandisfield, West Rd.; boating, fishing, hiking, bridle paths

October Mountain S.F., Lee & Lenox, Rte 20 & 7; camping, boating, hiking, bridle paths, handicapped facilities

Wahconah Falls State Park, Dalton, Rte 9 & 8A; camping, hiking, bridle paths

Greylock Mountain State Reservation, Adams, Rte 2, 7, 8; camping, fishing, hiking bridle paths

Clarksburg S.P., camping, boating, swimming, fishing, hiking bridle-paths

Peru S.F., Peru, Rte 143; fishing, hiking, bridle paths

Otis S.F., Otis, Rte 23; boating, fishing, hiking, bridle paths

Tolland Otis S.F., Otis, Rte 23 & 8; camping, boating, swimming, fishing, hiking, bridle paths, handicapped facilities

Savoy Mountain - Florida S.F., Florida, Rte 2 & 116; camping, boating, swimming, fishing, hiking, bridle paths

URBAN WILDERNESS

(STATE OR MDC PARKS AND FORESTS IN OR NEAR URBAN AREAS)
DNR OPERATED:

Robinson S.P., Agawam, North St. Feeding Hills; swimming, fishing, hiking, bridle paths

Chicopee S.P., Chicopee, Exit No. 6, Mass. Tpk.; swimming, fishing, hiking, bridle paths

Leominster S.F., Fitchburg, Rte 2 & 31; swimming, fishing, hiking, bridle paths

Quinsigamond S.P., Worcester, Rte 9; boating, swimming, fishing

Willard Brook S.F., Ashby, Rte 119; camping, swimming, fishing, hiking, bridle paths built incinerators in the late 50s and 60s in the belief that this was the best way to dispose of wastes. Now they have been told their incinerators are obsolete and must be expensively upgraded or shut down. These communities are hardly enthusiastic about trying a new, untried alternative.

The old bugaboo of "we don't want someone else's trash" is also heard as an excuse to do nothing. Yet if a resource recovery plant is to receive sufficient supplies of trash to operate, local cooperation among towns and cities is essential. Cooperation, however, calls for regionalization and that means both a plant and attendant small sanitary landfill (for ash residue) must be located in someone's community. "Not in ours," echoes the proverbial cry from town halls.

A more subtle reason for local recalcitrance is wishful thinking. "Why bother with the solid waste problem," the community subconscious often runs, "until it becomes a crisis." Before that day of reckoning the towns hope that some **deus ex machina** from Washington will drop down from the sky to solve the problem.

Not surprisingly, the obstacle underlying most municipal reluctance to resource recovery systems seemingly is money. While the figures are unclear and vary from town to town depending upon their present method of disposal, joining a system will, in the short run, cost communities more money. That means higher taxes — something few selectmen like to propose these days before town meetings.

For many communities, particularly those using landfill disposal methods, their disposal bill may run as little as $4 a ton. But in the case of Brockton and Whitman, which have hooked up with the East Bridgewater resource recovery plant, the costs to the two communities for disposal currently runs between $9 - $10 a ton. Resco plans to charge $13 a ton — which has touched off heated negotiations between the company and towns involved to lower the rate.

The money argument is becoming less convincing, however. Many communities such as Lawrence and Andover have been forced to shut down their dump and haul the trash out to some further location at a cost of over ten dollars a ton. That price is comparable to the rates that resource recovery companies plan to charge.

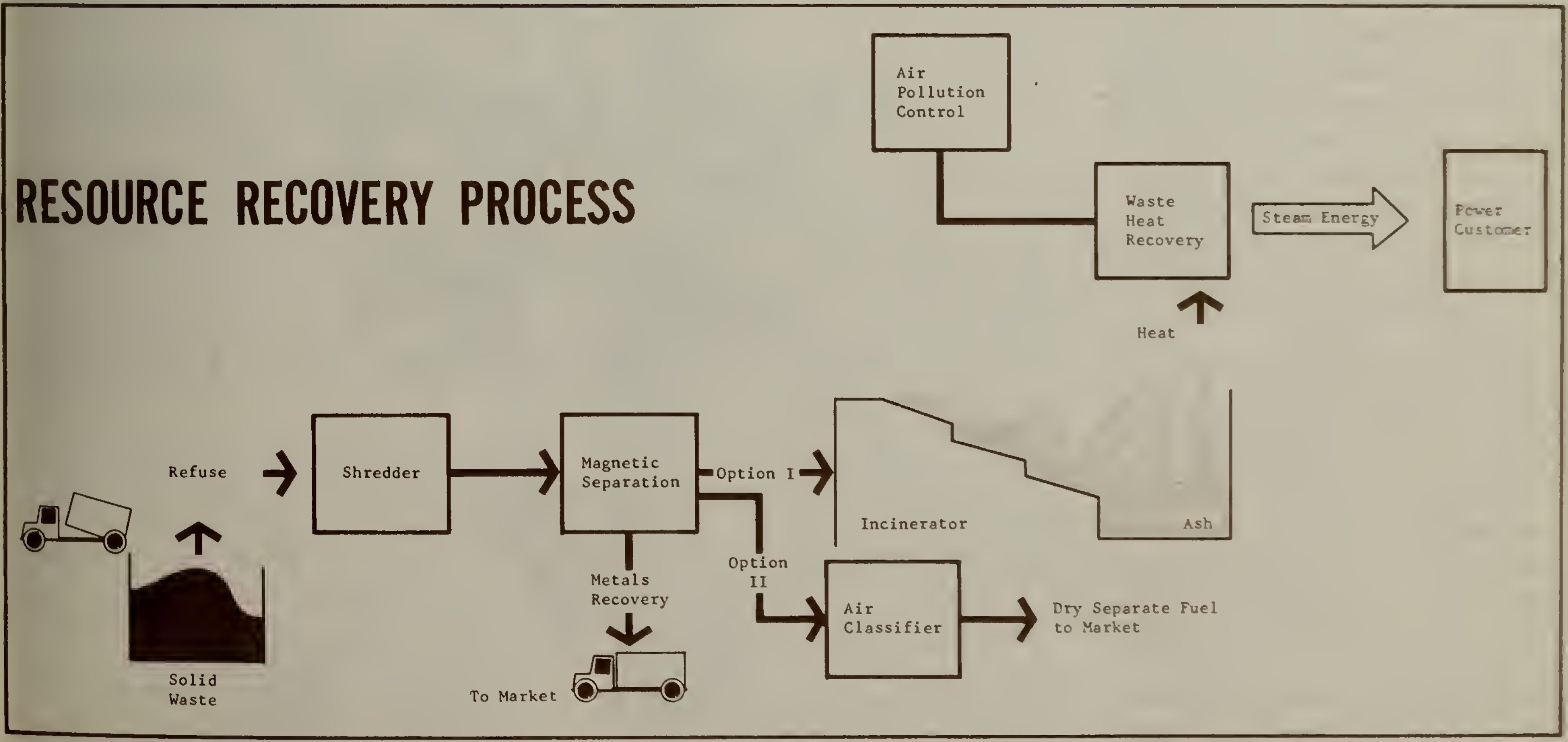
THE VICIOUS RECYCLE

Because of community resistance, state-wide movement toward resource recovery is in effect at this point caught up in a vicious recycle. William Gaughan, Assistant Director, Bureau of Solid Waste Disposal, describes the present situation this way:

—"There is no regionalization and resource recovery alternative without the communities voluntary participation.

—There is no voluntary participation as long as communities are allowed to continue present illegal and cheaper disposal practices.

—There is no effective enforcement without available disposal alternatives. The courts are reluctant to shut down a town's trash disposal operation even though it is in violation of the law unless there is a viable disposal alternative."



RESOURCE RECOVERY PROCESS

1) Refuse delivered to unloading area. 2) Shredded for easier materials separation and handling. 3) Magnetic separation allowing recovery of ferrous metals. 4) Option I — incineration of waste generating steam energy and piped to power customer. Or Option II — air classifier separates heavier from lighter, more combustible shredded wastes for use as dry fuel.

are waiting in the wings. Some major developments:

East Bridgewater Associates and Combustion Equipment Associates are jointly operating a plant in East Bridgewater that converts trash from Brockton, Whitman and Avon into dry-shredded fuel. The fuel is under contract to be sold to Weyerhauser Co. in Fitchburg. Weyerhauser plans to convert some of its oil-fired boilers in order to utilize the cheaper shredded fuel.

Refuse Energy Systems Co. (Resco), a joint venture of DeMatteo Construction Co. and Wheelabrator-Frye, is building a system in Saugus that will take refuse from surrounding communities and convert part of the waste into steam for a General Electric plant in the neighboring city of Lynn. Several communities — including Malden, Melrose, Medford, Chelsea, Everett, Revere, Wakefield, Stoneham, Winthrop and others — are presently negotiating a long-term contract with Resco expected to exceed $100 million, the largest inter-community contract ever entered into in the history of the Commonwealth.

Browning-Ferris Industries is running a resource recovery plant in Holliston that presently recycles paper wastes and will shortly be moving into metals and energy recovery. The company, which had been only processing waste from industries, just picked up its first municipal customer, signing a $260,000 a year contract with the town of Milford (population: 20,000).

SOLID WASTE PLAN

The state too, is playing a role in resource recovery. All of the agencies involved in the regulating and planning of solid waste disposal — including the Departments of Natural Resources, Public Health, Community Affairs and the Bureau of Solid Waste Disposal in the Department of Public Works — now advocate maximum resource recovery.

Says Alden "Slim" Cousins, Director of the Bureau of Solid Waste Disposal in DPW, "Our basic function is to create a climate that will bring communities and private industry together. For resource recovery to be successful, we must get communities out of the disposal business and private industry into it."

To accomplish just that, the Bureau is in charge of implementing a state solid waste plan. The plan calls for the establishment of as many as 12 privately-operated resource recovery plants throughout the Commonwealth. The total cost to implement the plan, which ambitiously aims at processing all of the state's 8 million tons of trash by 1980, would be $342 million.

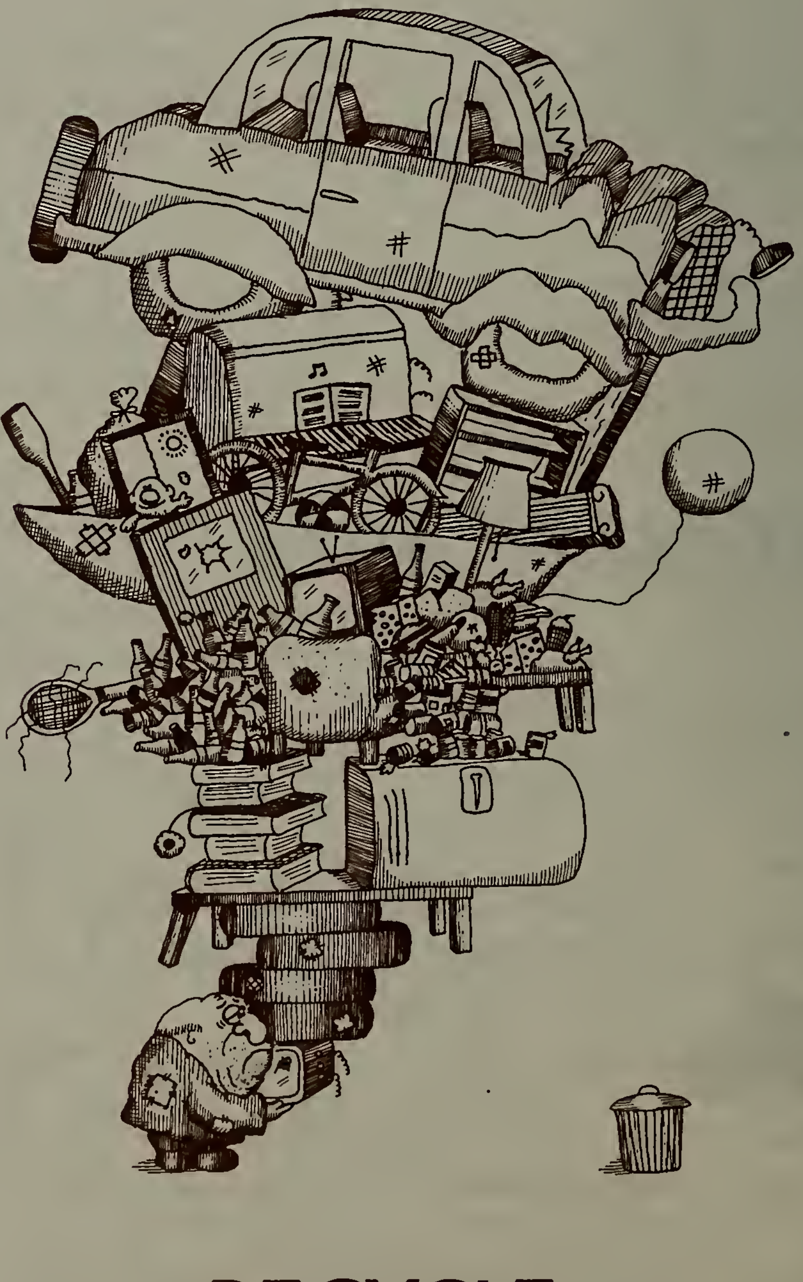
First phase of the program, now underway, is to organize the Merrimack Valley area — beginning with a nucleus of Andover, No. Andover, Methuen, Haverhill and Lawrence — into a regional solid waste district with a resource recovery system in operation by the end of 1976.

Voluntary participation is the key to the state plan. The Commonwealth is empowered by eminant domain to take land for recovery plants and disposal sites. But it can't force communities to join the system — a situation which has prompted one skeptic to suggest that it would take nothing short of a benevolent dictator to make the plan work.

Why does it seem that the stick rather than the carrot is necessary to move communities to participate in a resource recovery system? There is no shortage of reasons for community resistance.

To begin with, resource recovery plants are few, new and untested, with plenty of technical and financial wrinkles yet to be ironed out. Communities are reluctant to commit themselves to the long-term contracts that companies insist on if there are no assurances they won't be left holding the bag if resource recovery plants are forced for one reason or another to shut down.

Then too, some cities and towns



RECYCLE

Recycling Revolution Cooperative

Calahan S.P., Framingham, Millwood St.; hiking, bridle paths

Lowell-Dracut S.F., Lowell, Mammoth Rd.; hiking, bridle paths

Borderland S.P., Easton, Massapoag Ave.; fishing, hiking, bridle paths

Watson Pond S.P., Taunton, Rte 138; swimming, fishing, handicapped facilities

Harold Parker S.F., No. Reading, Rte 125; camping, boating, swimming, fishing, hiking, bridle paths

Massasoit S.P. Taunton, off Rte 18 - 44 - 79 - 28 - 24; camping, swimming, fishing, handicapped facilities

Wompatuck S.R., Cohasset, Rte 228; camping, fishing, hiking, bridle paths

Myles Standish S.F., So. Carver, Rte 3, 44 & 58; camping, boating, swimming, fishing, hiking, bridle paths, handicapped facilities

MDC operated:

Middlesex Fells Reservation, Malden, Medford, Melrose, Stoneham and Winchester, off Rte 28 & 93; hiking, bridle paths, fishing, zoo

Breakheart Res., Saugus & Wakefield, off Lynn Fells Pkwy near Rte one; fishing, hiking, swimming

Cutler Park, Newton, off Rte 128; fishing, boating, hiking, bird-watching

Blue Hills Res., Braintree, Canton, Milton, Randolph & Quincy, off Rte 3, 28, 128, 138; fishing, swimming, hiking, bridle paths

Stony Brook, Hyde Park and West Roxbury sections of Boston, Enneking Pkwy; fishing, hiking

For further information on the state's parks and forests contact:

MDC Parks, Boston, 727-7090

DNR, Division of Forests & Parks, Boston, 727-3180

or

Forest & Parks Offices:

Southeast Region,
Myles Standish S.F.,
So Carver, 295-2135

Northeast Region,
Lowell Rink, Lowell,
458-9673

Central Region,
Clinton Nursery, Clinton,
365-5908

Connecticut Valley,
Amherst Nursery,
Amherst (413) 549-1461

Berkshires,
Pittsfield S.F.,
Pittsfield, (413) 442-8992

THE NEW AGE OF RESOURCE RECOVERY

The easiest and most common way of disposing of household wastes — garbage and rubbish — is to bury it in a dump. But this is like sweeping dirt under the rug. The trash isn't really disposed of; it is simply moved to some less conspicuous place.

Obviously, this sleight of hand does little to prevent trash from piling up. In Massachusetts alone, 7.5 million tons of solid waste are generated annually, equivalent to seven pounds per person per day. By 1980, the state will generate 8.2 million tons annually. But long before that time, as communities run out of land to dump refuse or their incinerators are forced to shut down for failing to meet air quality standards, the solid waste problem may have reached crisis proportions in several areas.

But despair not. The new age of resource recovery is dawning — an age that could turn crisis to advantage. Resource recovery is really nothing new. It is an updated technology, or more accurately put, contemporary art of reclaiming and utilizing — instead of tossing to oblivion — the one thing the world has in abundance: solid waste. From this waste stream can be plucked scrap metal, waste paper, throw-away bottles and other refuse found in what aptly has been termed "urban ore".

A new twist to resource recovery, however, is energy recovery. Power is produced either by burning rubbish to generate steam energy or converting solid waste directly into a supplemental fuel for industrial coal or oil burners.

In terms of its potential, resource recovery could be a salvation for a world running out of materials and natural resources. For one thing, resource recovery can reclaim from the waste stream materials that are becoming increasingly scarce such as metals, paper, even plastics. Aluminum cans, for example, are returning $200 a ton from manufacurers. And waste paper, which comprises the largest portion of salvageable wastes, is in such short supply that it now fetches over $25 a ton in the open market, up from about $10 a ton in the last year.

Another benefit of resource recovery is land saving. Through some of the available recovery processes, the volume of waste can be reduced as much as 95 percent. The residue left from advanced processing requires only a fraction of the land previously needed for disposal.

Most astounding of all is the energy potential of solid waste itself. According to a study by the Arthur D. Little Co., the energy recovered from municipal wastes in Massachusetts could account for 15 percent of the energy consumption consumed by utility companies in the Commonwealth — no drop in the bucket for this energy-deficient state.

Taken on a national scale, the projections become even more dramatic. If solid waste from every major U.S. city were used as fuel, there would be an energy recovery equivalent to 150 million barrels of oil a year. "That's enough energy to light our homes and commercial establishments all year long," claims Arsen Darnay, Deputy Assistant Administrator in charge of the U.S. Environmental Protection Agency's Solid Waste Programs.

CASH IN TRASH

The potential of solid waste has not gone unnoticed. According to some financial analysts, solid waste management could mushroom into a $6 billion industry. With the sweet smell of profit in the air, it isn't surprising that private enterprise is moving in to cash in on trash. In Massachusetts, several companies are already on stage in developing resource recovery plants, and others

It is evident that the road to resource recovery will not be easy and will take time. Markets for recycled materials are still undeveloped; both private and public funding for resource recovery systems have not yet been established. Recovery plants are unproven to date, and the public is still to be educated to the need and real benefits of recourse recovery.

But time notwithstanding, the logic of resource recovery is compelling; sooner or later it will come. The cost gap between the conventional disposal method of landfill and resource recovery is rapidly closing — and in fact may be already closed. Solid waste experts predict that the cost of disposal for sanitary landfill in urban areas will ultimately exceed that of resource recovery. Not only will diminishing available land push costs up, but as towns have to go farther out in search of landfill space, gasoline costs to haul trash longer distances will add a hefty increase to the total waste disposal bill.

On the other side of the ledger, the costs of hooking into resource recovery systems should stabilize and maybe even drop as markets for recycled materials develop, economies of scale come into operation and technology is refined. Add to this the fact that resource recovery should minimize the air and water pollution that accompany dumping and conventional incineration, then the balance should weigh heavily in favor of resource krecovery.

Admittedly resource recovery is not a panacea for all our solid waste ills. It is applicable to municipal wastes, but not all of them. Wastes like demolition debris, tires and sewage sludge cannot be processed through many recovery systems and sewage sludge still has to be dumped somewhere. And an important portion of the solid waste stream — hazardous wastes, such as mercury, metal sludges and waste solvents — is a problem still unsolved.

Nevertheless, for all its limitations, resource recovery attempts to meet the twin environmental crises of our age head on. It not only attempts to manage the disposal of solid waste amidst the mounting heaps of rubbish, but it also promises to conserve materials and energy in the face of diminishing world resources.

ON THE DOCKET

The following are major environmental bills now under consideration in the Massachusetts legislature.

Bike and Hike Trails Bills (S1135, H1260) — Call for state reimbursements to cities and towns establishing bicycle paths and hiking trails. Under the bill, the Commissioner of Natural Resources would be authorized to setup a program to assist communities with conservation commissions in acquiring land for and planning, designing and constructing bicycle paths and hiking trails.

Energy Conservation Commission Bill (H5262) — Establishes a public commission to coordinate research, development and planning programs to meet the Commonwealth's energy needs in coming years. The bill's implications are vital to a state not only energy deficient, but which also wastes 50 percent of all energy generated.

Environmental Impact Report Bill (H5828) — Under the Massachusetts Environmental Policy Act (MEPA), Environmental Assessment Reports are required for all projects undertaken by state agencies as well as private sectors involving either state funding or licensing. The purpose of MEPA is to move both the public and private sector to consider the environmental impact of their activities in order to minimize potential environmental damage. Environmental Impact Report Bill exempts private projects outside the scope of an agency's jurisdiction from impact statements previously required under MEPA. This reduces to some degree the responsibility of the private sector to consider environmental consequences of their actions. (**Passed**, Chapter 257, Acts of 1974.)

Environmental Reorganization Bill (H4000) — By far the most important environmental legislation to come down the pike this year, or for that matter, any year. The bill calls for sweeping consolidation of environmental responsibilities — now fragmented and scattered among four cabinet secretaries, seven major departments and 49 state agencies — under a single operating agency, the Department of Environmental Affairs. Principal agencies merged into the new Department would be the Departments of Natural Resources and Agriculture and the Metropolitan District Commission. Once the superagency is formed, five environmental districts would be established throughout the state. This alignment would decentralize delivery of environmental services and make state government more efficient and responsive to the needs of the people.

Martha's Vineyard Protection Bill (H5567) — Sponsored by Governor Sargent, the bill is a prototype land use law for the Commonwealth. The bill calls for planning and regulating growth in order to preserve the Island's natural and cultural character. Another important feature is a moratorium on development to halt immediately runaway growth now taking place on the Island. The bill is designed to complement federal protection legislation for Martha's Vineyard sponsored by Senators Kennedy, Brooke and Congressman Studds.

Mineral Resource Bill (H472) — Designed to conserve mineral resources and to prevent despoiling the landscape, this bill seeks to establish state guidelines for land mineral extraction and site rehabilitation, and most specifically for reclamation of unsightly gravel pits.

Scenic Mountains Bill (S1608) — empowers municipal conservation commissions, or if none, selectmen or mayor, to restrict development that would mar the scenic quality of mountain regions in their community. The bill covers only communities in the Berkshire region.

DIVISION DIRECTORS

CONSERVATION SERVICES Joel A. Lerner	727-3170
FORESTS AND PARKS Bruce S. Gullion	727-3180
LAW ENFORCEMENT Kenneth A. Crossman	727-3190
MARINE FISHERIES Frank Grice	727-3193
MINERAL RESOURCES Robert C. Blumberg	727-3260
WATER POLLUTION CONTROL Thomas C. McMahon	727-3855
WATER RESOURCES Charles F. Kennedy	727-3170
ACQUISITION & ENGINEERING Richard J. Correia	727-3174

RESOURCE Published by
MASSACHUSETTS DEPARTMENT
OF NATURAL RESOURCES,
DIVISION OF CONSERVATION SERVICES
LEVERETT SALTONSTALL BUILDING
100 CAMBRIDGE STREET
BOSTON, MASS. 02202
DAVID KALES, Editor
LORRAINE A. AGRI, Graphics Coordinator
JACK WOOLNER, Photographer
JAMES E. HEALEY, Information & Publicity

Govern
C
OCT 1974

ENVIRONMENTAL
RESOURCE

assachusetts Department of Natural Resources   Arthur W. Brownell, Commissioner   July-August 1974   Number Fourteen

MASSACHUSETTS RIVERS: REPORT FROM MIDSTREAM

Most of Massachusetts' rivers have been polluted for decades; in some cases, the problem goes back well over 100 years. A great deal of work is currently under way to upgrade the water quality of the rivers. In 1974-5, more than $250 million will be spent in the Commonwealth to build wastewater treatment facilities. (ninety percent of this is being funded through federal and state grants.) Future projects call for an estimated $600 million in the years ahead.

No one is certain just how much money, technology or time will be needed to really improve our rivers. But one thing should be painfully obvious: our rivers will not be cleaned up overnight.

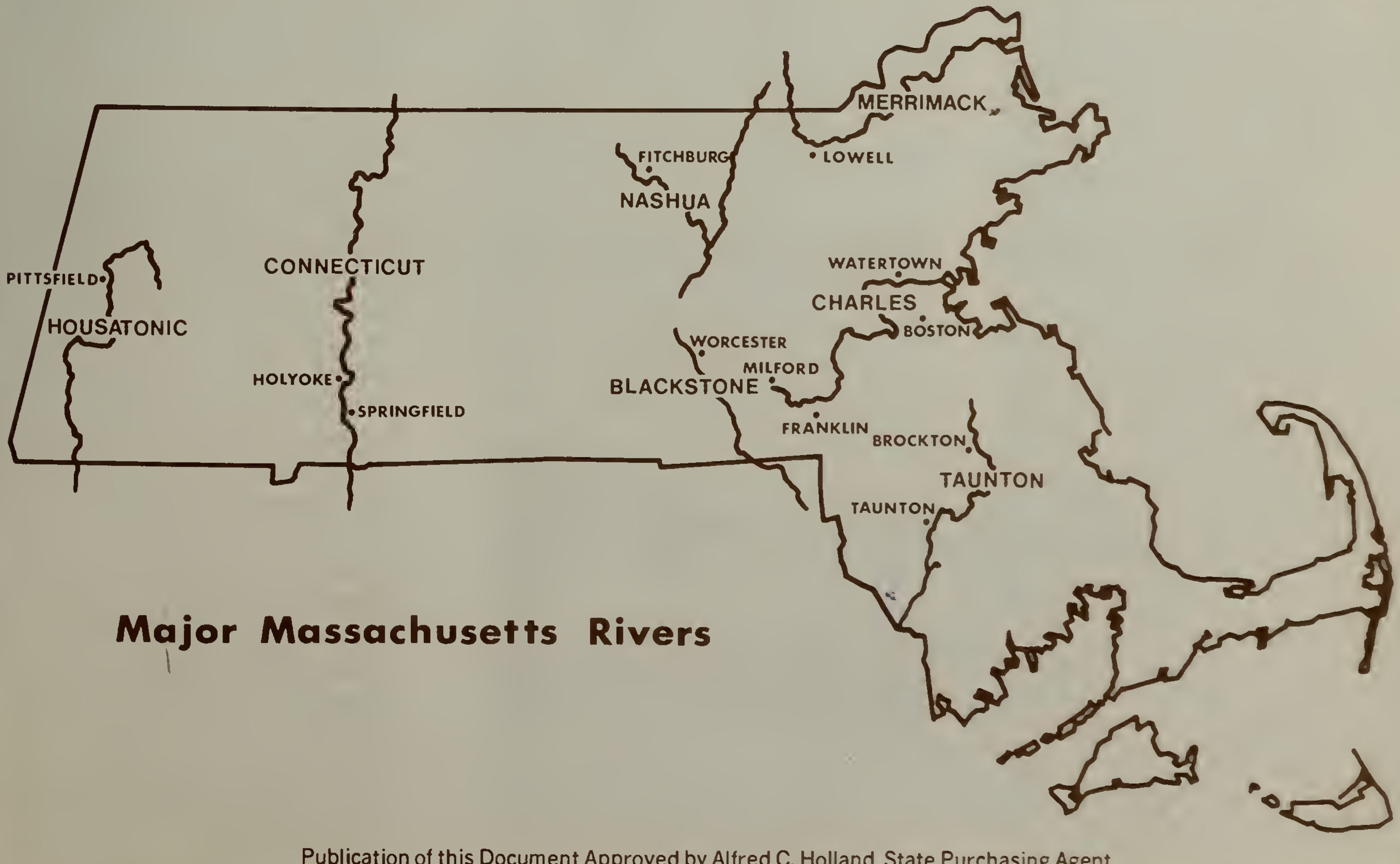
The following, written in conjunction with the Massachusetts Division of Water Pollution Control, is a summary of the present status and future prospects of Massachusetts' major rivers.

Housatonic — Polluted since the 19th century, the river has shown marked improvement in recent years. Paper mills, once the major polluters, have installed modern treatment plants and General Electric in Pittsfield has eliminated a good portion of its waste discharge.

More improvement will be seen when Great Barrington's sewage treatment plant goes on line this summer. And with Pittsfield's regional plant in operation by 1978, the Housatonic should be in excellent condition for canoeing and fishing along several long stretches. (The river is too swift for swimming.)

But water quality experts feel if the river is to ever fulfill its great recreational potential, the old, abandoned paper mill dams that hold back the river's flow and cause solids to back up and settle into stagnant pools will have to be removed.

For the Berkshires, full restoration would make canoeing or fishing in the river an outdoor experience that would truly complement the cultural high-life of Tanglewood and environs. For Massachusetts, such restoration would return the Housatonic to the nearest thing to a wild river — its



Major Massachusetts Rivers

Publication of this Document Approved by Alfred C. Holland, State Purchasing Agent.
5M-8-74-082629   Est. Cost Per Copy: $.086

original condition before the white man arrived.

Connecticut — Although the state's largest river, "Mother River" (so-called because of its many tributaries) is relatively clean. Even now there is canoeing, fishing and swimming in the upper portions. But severe pollution problems exist in the Lower Connecticut Valley in the Holyoke-Springfield area. Pollution comes chiefly from human and industrial wastes and thermal discharges from a power plant.

To correct the problem, towns and cities are either building or upgrading wastewater treatment facilities. The largest treatment complex, the $60 million Springfield Regional Treatment Facility is now under construction and will serve the Monsanto Co., Springfield and surrounding communities. When the Springfield facility is completed in 1976, the Connecticut should be vastly improved in this portion.

But full restoration of Mother River's water quality is unlikely until all her tributaries — among them the heavily polluted Millers, Chicopee and Westfield rivers — are improved. This remains a goal that is — in the case of the Millers and Westfield — still years away.

Merrimack — The river has grown steadily worse ever since Henry Thoreau, paddling down its waters over 100 years ago and reflecting on the philosphies of the East and Transcendentalism, noted how numerous factories along the banks were beginning to take possession of the river for industrial use.

Today the Merrimack is heavily polluted on both sides of the New Hampshire — Massachusetts line, mainly from raw municipal sewage and textile wastes. Scum, sludge, oil and odors are not uncommon, especially near the three greatest areas of pollution — Lowell, Lawrence and Haverhill.

The Merrimack does have some things going for it. Like the Connecticut, it is a huge river that can assimilate a great deal of wastes; and a lot of water movement enables the river to flush itself out quickly. Its natural regenerative powers, plus a little help from man to the tune of an estimated $100 million in municipal waste treatment plants in the Lowell, Lawrence and Haverhill areas, should markedly improve the river before the end of the decade.

But problems remain, such as Lowell, Lawrence and Haverhill's antiquated combined sanitary-storm sewerage system which allows untreated sewage to flow into the river. Even if and when this problem is solved, it is doubtful the Merrimack will ever look like it did in Thoreau's day.

Nashua — It holds the dubious distinction of being the most polluted, unattractive river in the state. The north branch, between Fitchburg and North Lancaster, is virtually an open sewer. Into the river in this stretch flows untreated sewage from Fitchburg and Leominster's overloaded treatment plants. More untreated sewage from Fitchburg's combined sewer overflows as well as industrial wastes from several paper companies thicken the concoction.

Some of these wastes find a stagnant resting place behind the dams between Fitchburg and Leominster. The remainder flow downstream, turning the water milky-brown and coating banks and low-hanging tree branches with paper fibers, reminiscent of a scene from some Gothic tale. Quips one native of the area, "You'd be a goner if you fell into the river."

While the Nashua is in a sorry condition, it has hit rock bottom and has nowhere to go but up. Indeed there are now some signs of life. To begin with, although the river itself is badly polluted, some of the most beautiful pine forests and finest wildlife areas in the state line its banks. The federal government has thrown in its support, designating the Nashua as a pilot project on "how a river can be cleaned up."

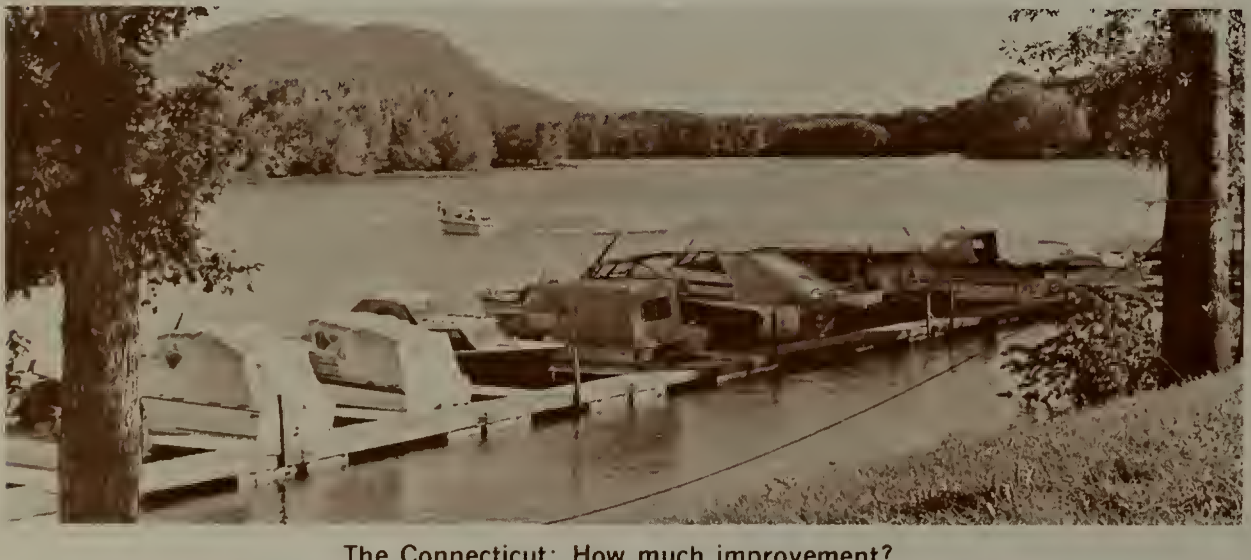
The river should really get a boost when two municipal-industrial wastewater treatment plants in Fitchburg are on line in 1975. These two plants, serving Fitchburg and surrounding communities as well as the Weyerhaeuser and Fitchburg Paper Companies, could reduce pollution as much as 80 percent below present levels.

By 1980, water quality experts predict, the Nashua should at least look like a river again. But over a century of pollution, especially of sludge deposits on the river bottom, has taken its toll. Unless there is a deluge on the order of Noah's flood, it will take years for the sluggish Nashua to cleanse itself for swimming or even good fishing.

Blackstone — It ranks second only to the Nashua as the state's most polluted river. With the Blackstone's major degradation stemming from Worcester's 200,00 population located at the headwaters, the river never has a chance to absorb the pollution impact. As it winds its way southeast to Rhode Island, additional pollution is dumped in from municipal and such industrial wastes as textile dyes and metal finishings.

The river's pollution should be considerably reduced when a new $25 million regional treatment plant in Worcester is completed in 1976. Eventually some fishing and boating, although no swimming, will certainly be possible.

But the biggest obstacle to the river's full restoration, particularly its great recreational potential, is



The Connecticut: How much improvement?

The Merrimack: Nothing like it was in Thoreau's day.

neither money nor technology. Ironically, it is a historical legacy. As the cradle of America's textile industry, the Blackstone has numerous sites along its course such as 19th century mills and the Blackstone Canal (all of which could be restored.) However, the very same legacy has indelibly etched into the minds of the region's inhabitants a view of the river as only an "industrial stream" — an unyielding attitude that continues to prevent any real rebirth of the Blackstone.

Taunton — Encompassing a huge, 530-square mile watershed with numerous tributaries, the Taunton picks up every conceivable kind of pollution. Inadequately treated or raw sewage flows into the river system from urban areas such as Brockton, Taunton and Fall River. More sewage trickles in from overflowing septic tanks in growing communities like East Bridgewater, Abington and Easton.

Chemicals, toxic metals, acid and alkaline waste waters are dumped in by textile, electroplating and food processing industries scattered throughout the river basin. Thermal pollution from several power plants degrades the waters further and causes fish kills in Mt. Hope Bay. Rural areas provide little relief from pollution; pesticides from cranberry farming seep into tributaries, while animal wastes from dairy farming in Bridgewater make their way into the mainstream.

The city of Taunton is upgrading its treatment plant. Plans call for $30 million in wastewater treatment facilities for the Old Colony Region — the Bridgewaters, Abington, Whitman, Easton and Hanson; and $14 million for the Rumford River Region — Norton, Mansfield and Foxboro. However, to date neither region has been politically consolidated to begin treatment plant construction, and no one is hopeful about the prospects for any short-term improvement of the river.

Charles — The river suffers from an acute case of ecological schizophrenia. The major portion, from the headwaters at Hopkinton downstream about 70 miles to the Watertown Dam, should show improvement soon. But for the other portion — from the Watertown Dam eight miles downstream to Boston Harbor — a timetable for full recovery is still undetermined.

In the major portion, consisting of the upper and middle stretches, the river is heavily polluted. Particularly in the upper reaches where the stream is small, domestic sewage and industrial wastes from the Milford area have a heavy impact. Below Milford, pollution fills the river with suspended solids, colors it a muddy gray and causes the level of dissolved oxygen — so vital to a stream's health and appearance — to fall to levels near zero in the summer. In Box Pond, downstream from Milford, detergent and human waste pollutants carry nutrients that stimulate excessive algae and duckweed growth, which in turn, become both a nuisance and a health hazard.

But cleanup is on the horizon. Medfield has an advanced treatment plant under construction. A regional plant for Franklin and Medway is on the boards. Other communities in the area will be negotiating to tie into this regional facility. Within the decade, the water quality of the upper Charles will be suitable not only for boating and fishing, but possibly even for swimming as well.

The middle portion has its share of pollution problems too. The growth of towns like Natick and Wellesley has been so rapid that their sewerage systems have become overloaded and municipal wastes overflow into the Charles, never reaching their destination at the Metropolitan District Commission's Nut Island treatment plant in Boston Harbor.

Other towns have faulty septic tanks from which sewage seeps into the river. And in highly developed areas like Waltham, urban runoff from gas stations, shopping plazas

The Charles: Deliverance or dammed?

landscape holds incredible potential both for passive recreation such as hiking, horseback riding and camping, and for environmental education and nature interpretation as well.

An extensive wetland called Tophet Swamp, abounding with pheasants, ducks, Canadian geese, rabbits and foxes, could be adapted as a wildlife natural area. Next to this, a historical interpretation area could be developed on the site of an old mill and stockade where settlers took refuge from Indian raids in the 17th century. In fact, this section of the Farnham Smith property was called "The City" in colonial times because of the number of farm houses and fields that were clustered around the grist mill.

The most exciting prospect is development of a model demonstration farm. Presently Mr. Farnham Smith operates a working dairy farm called Great Brook Farm. In three years the farm will be transferred to the Department. At that time we hope to be able to make Great Brook into an interpretative farm similar to Audubon's Drumlin Farm in Lincoln.

Farnham Smith, 72 year-old Concord bred, later Carlisle-based financier and farmer, built up his estate almost from scratch. In 1940, restless in Concord and sensing a food shortage with the approach of war, he purchased eight acres of farmland in Carlisle. Shortly afterward, he added another 65 acres of land, and as he describes it, "a dilapidated barn, hen house and eight broken-down cows."

Over the years, he continued to develop as well as expand his property: acquiring more farms and adjacent woodlands; draining swamps and dredging ponds. Today his land is dotted with beautiful ponds and marshes; his woodlands are worth over $250,000 in timber value; and Great Brook Farm ranks as one of the finest dairy and Holstein-raising farms in eastern Massachusetts.

Thanks to Farnham Smith's vision of conservation and public spirit, this land now belongs to all of us. The Department of Natural Resources is steward of the property. But if this land's natural as well as man-made beauty is to remain unspoiled, we must have the cooperation and pride of ownership of everyone who uses it.

Arthur W. Brownell

ON THE DOCKET

The following are major environmental bills either passed into law or defeated in the Massachusetts legislature this year.

BIKE AND HIKE TRAILS BILL — Calls for state reimbursements to cities and towns establishing bicycle paths and hiking trails. Under the bill, the Commissioner of Natural Resources would be authorized to setup a program to assist communities with conservation commissions in acquiring land for and planning, designing and constructing bicycle paths and hiking trails. **(Defeated)**

Energy Conservation Commission Bill — Establishes a public commission to coordinate research, development and planning programs to meet the Commonwealth's energy needs in coming years. The bill's implications are vital to a state not only energy deficient, but which also wastes 50 percent of all energy generated. **(Defeated)**

Environmental Impact Report Bill — Under the Massachusetts Environmental Policy Act (MEPA), Environmental Assessment Reports are required for all projects undertaken by state agencies as well as private sectors involving either state funding or licensing. The purpose of MEPA is to move both the public and private sector to consider the environmental impact of their activities in order to minimize potential environmental damage. Environmental Impact Report Bill exempts private projects outside the scope of an agency's jurisdiction from impact statements previously required under MEPA. This reduces to some degree the responsibility of the private sector to consider environmental consequences of their actions (Passed, Chapter 257, Acts of 1974)

ENVIRONMENTAL REORGANIZATION BILL — By far the most important environmental legislation to come down the pike this year, or for that matter, any year. The bill calls for sweeping consolidation of environmental responsibilities — now fragmented and scattered among four cabinet secretaries, seven major departments and 49 state agencies — under a single operating agency, the Department of Environmental Affairs. Principal agencies merged into the new Department would be the Departments of Natural Resources, and Agriculture and the Metropolitan District Commission. (**Passed**, Chapter 806, Acts of 1974)

MARTHA'S VINEYARD PROTECTION BILL — Sponsored by Governor Sargent, the bill is a prototype land use law for the Commonwealth. The bill calls for planning and regulating growth in order to preserve the Island's natural and cultural character. Another important feature is a moratorium on development to halt immediately runaway growth now taking place on the Island. The bill is designed to complement federal protection legislation for Martha's Vineyard sponsored by Senators Kennedy, Brooke and Congressman Studds. (**Passed**, Chapter 637, Acts of 1974)

MINERAL RESOURCE BILL — Designed to conserve mineral resources and to prevent despoiling the landscape, this bill seeks to establish state guidelines for land mineral extraction and site rehabilitation, and most specifically for reclamation of unsightly gravel pits. **(Defeated)**

SCENIC MOUNTAINS BILL — Empowers municipal conservation commissions, or if none, selectmen or mayor, to restrict development that would mar the scenic quality of mountain regions in their community. The bill covers only communities in the Berkshire region. (**Passed**, Ch. 842, Acts of 1974)

DIVISION DIRECTORS

CONSERVATION SERVICES Joel A. Lerner	727-3170
FORESTS AND PARKS Bruce S. Gullion	727-3180
LAW ENFORCEMENT Kenneth A. Crossman	727-3190
MARINE FISHERIES Frank Grice	727-3193
MINERAL RESOURCES Richard Boehmer	727-3260
WATER POLLUTION CONTROL Thomas C. McMahon	727-3855
WATER RESOURCES Charles F. Kennedy	727-3170
ACQUISITION & ENGINEERING Richard J. Correia	727-3174

RESOURCE
Published by
MASSACHUSETTS DEPARTMENT
OF NATURAL RESOURCES,
DIVISION OF CONSERVATION SERVICES
Leverett Saltonstall Building
100 Cambridge Street
Boston, Mass. 02202

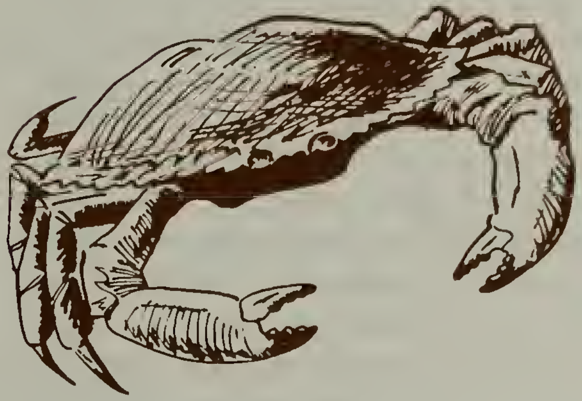
DAVID KALES, Editor
LORRAINE A. AGRI, Graphics Coordinator
JACK WOOLNER, Photographer
JAMES E. HEALEY, Information & Publicity
JULIE GUINN, Reporter

UNDER-EXPLOITED SPECIES

Ocean Quahaug — Found in abundance in deep water, this hard clam has a darker color meat and a different texture than the highly utilized shallow-water quahaug. Because of the ocean quahaug's strong taste, a small amount goes a long way, making it ideal for chowder. Once harvesting, pricing as well as the iodine taste problems are worked out, the ocean quahaug should show up more and more on the menu.

Ocean Quahaug

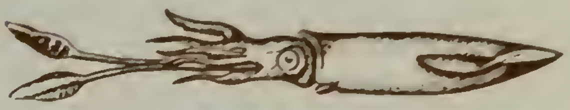
Red Crab — Formerly a commercial reject, this deep-water "creature of the Continental Shelf" (and therefore legally protected from foreign fishing) is currently the focus of great fishing interest. The excellent taste, texture and aroma of red crab meat may prove to be a delicious alternative to lobster for New England seafood lovers. Two New England fish processing companies are already selling red crab commercially. But while abundant quantities of red crab exist off Georges Banks, whether or not this crustacean population can sustain any major fishing effort over time remains unknown.



Red Crab

Dogfish

Dogfish — U.S. fishermen find this slender, small shark a nuisance. But Norwegians and Germans like its tender sweet white meat. And the British eat it in their popular "fish 'n chips." If processing problems are solved and the dogfish name is changed to something like "rock salmon" as one clever fish dealer has done, a domestic market might be opened up.



Squid

Squid — Japanese fishermen have been selling Atlantic squid in Italy under the name of "Boston Calamari." Domestically, squid is also popular with such ethnic groups as Greeks and Italians. Gourmets report that the boneless and entirely edible squid is tastely served in cut strips sauteed in sauce or fried in batter. But until cleaning problems are solved and the "squid image" is changed to some more palatable-sounding name, it is unlikely that this mollusk will be appearing on Howard Johnson's menu. In time though, the fast food restaurants should be pushing "fried squid rings to go."

COMMISSIONER'S CORNER:

A CLASSIC PIECE OF NEW ENGLAND LANDSCAPE

Great Brook Farm in Carlisle

Located in Carlisle, one of the few remaining rural towns in eastern Massachusetts, is an area comprised of some 860 acres of wetlands, woodlands and farmland. Formerly the Farnham Smith property, the land now belongs to the Commonwealth.

The department of Natural Resources, in a transaction involving the highest purchase price it has ever paid for land, acquired the property this summer for $4.2 million. We think the price was worth every penny of it.

To begin with, about one-half of the purchase cost will be reimbursed through the U.S. Bureau of Outdoor Recreation's Land and Water Conservation Fund. After more than 15 years of searching, the Department has finally acquired a significant piece of open space and recreation land situated near both the highly urbanized areas of Lowell and metropolitan Boston.

Plans for turning the Farnham Smith property into a state park are now beginning to be developed. But it is obvious even at first glance that this classic piece of New England

and apartment houses all contribute to pollution of the river. Nonetheless, within the decade, when all the new treatment plants have been installed and all the towns and city sewerage lines have been modernized and expanded, the middle portion, along with the upper portion, should be clean.

Cleanup of the lower portion, however, remains a much more difficult problem. As a result of the poor flushing action in this portion, sludge deposits settle to the river bottom, instead of being borne out to sea. At the same time, salt water intrudes from Boston Harbor, contributing to septic conditions in the bottom waters of the Charles Basin. Worst of all, Water Pollution Control monitoring teams have found high concentrations of coliform bacteria, an indicator of human wastes entering the water — and thus of possible human contamination.

The greatest source of this pollution are the 30 or so combined sewer overflows from Cambridge and Boston. Whenever flows exceed the capacities of the combined sanitary-storm sewer pipes (which happens in virtually every rainstorm) the storm water, along with untreated human wastes from the most densely populated area of Massachusetts, overflows through conduits into the Charles.

Efforts have been taken to reduce the pollution. The MDC, which holds jurisdiction over the lower portion of the Charles, has built a chlorination and detention station at the B.U. Bridge to reduce the frequency of untreated overflows. Consisting of six tanks which together hold over one million gallons from a single overflow, this facility can skim and screen sludge and chlorinate the overflow before its discharge into the river. The sludge and screenings then go to the MDC treatment plant on Deer Island in Boston Harbor.

Another chlorination and detention station to be completed in 1977 should further reduce overflows into the Basin. The cleaning up of relief sewers designed to catch some of the overflows has made the system somewhat more efficient. Finally, the construction of a new dam and pumping station should help reduce salt water intrusions that greatly contribute to pollution. "Once the new dam is built," says an MDC expert, "the water in the lower basin should be stratified and the sludge rendered harmless."

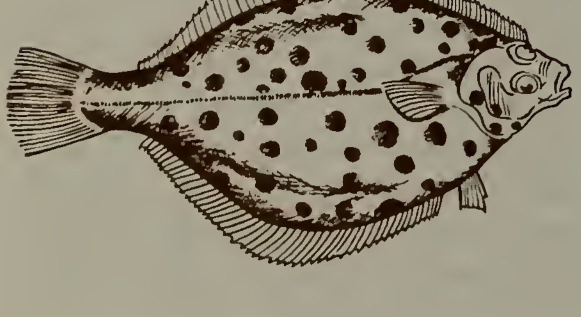
Despite all these improvements, water pollution control experts feel that not until the most staggering task — that of correcting the combined sewer overflows — is faced, will the Charles River Basin have any real chance to be cleaned up. This task of correcting the combined sewer overflows — which in its entirety includes all combined sewer overflows from Cambridge, Somerville and Boston both into Boston Harbor as well as the Charles — could cost as much as $1 billion.

THE OVER-EXPLOITED AND THE UNDER-EXPLOITED

In recent years, over-exploitation of several fish and shellfish species has severely depleted these marine resources in the Northwest Atlantic. But with the realization that some of our favorite seafoods — as well as valuable sources of protein — are in jeopardy, a number of under-utilized species are now being considered as potential subsitutes for the American palate.

OVER-EXPLOITED SPECIES

Yellowtail Flounder — A member of the flatfish family, the yellowtail flounder dwells on sandy bottoms off Cape Cod, Nantucket and Georges Banks (50 - 250 miles off Nantucket). Although small (1 - 1½ lbs.) and thinner than other flounder species, the yellowtail is considered a fine table fish. But as a result of Russian overfishing, the stock of this commercially important food fish is on the verge of commercial extinction.

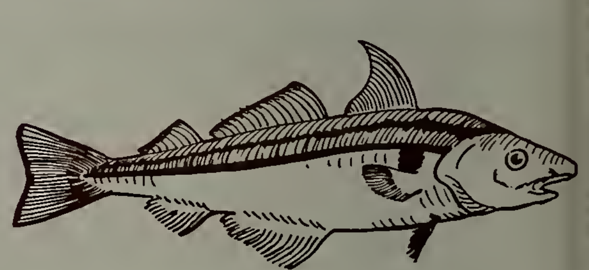


Yellowtail Flounder

Haddock — Averaging 5 - 8 pounds in size, the haddock is a coastal as well as offshore bottom-dwelling fish. This favorite New England food fish is characterized by three dorsal fins and a black shoulder patch that legend calls "the devil's thumbprint." The term "scrod" refers to the smaller market size haddock. Due in part to Russian and Canadian over-fishing, haddock population has been so depleted that the U.S. government has declared it a resource disaster.

Cod

Cod — Marketed fresh, smoked, sauteed, canned or frozen, the cod or codfish is synonymous with the Bay State. Its comparatively large size (10 - 12 lbs. average) and ubiquity (found year round in the rocky bottom waters of Nova Scotia and New England) has long made the cod an important North Atlantic food fish. But with the cod catch way down in recent years, this former mainstay of the Massachusetts fishing industry appears to have also fallen victim to foreign over-fishing.



Haddock

Lobster — Found on rocky, sandy or muddy bottoms from inshore to beyond the edge of the Continental Shelf, the lobster is considered by many to be the most popular New England seafood. But due largely to domestic over-fishing, the lobster population has declined — and the prices have soared. As a result of over-exploitation of this species, lobster aqua culture (growing marine species by special culturing methods) is in the offing.

Lobster

MASS. EA1.4: 15

[illegible] Collection

ENVIRONMENTAL
RESOURCE

Massachusetts Department of Natural Resources | Arthur W. Brownell, Commissioner | Sept. — Oct. 1974 | Number Fifteen

SPECIAL ISSUE:

THE BIG MONEY FOR LAND USE PROTECTION

Massachusetts has a variety of ways of regulating and protecting land use. Locally, zoning can be established to provide flood plain protection, preserve the historic integrity of an area, or, in the case of cluster zoning, create green space. Even more individually tailored, conservation restrictions can be drawn up to suit development to the land. On the state level, wetland protection legislation as well as scenic rivers, roads and mountain laws can be invoked to restrict the uses of land.

But the best way to insure land is used properly is to buy it lock, stock and barrel. Of course, land acquisition costs money — lots of it in this inflationary era. To ease the financial burden of buying land for conservation and outdoor recreation purposes, two programs are operating in the Commonwealth — the Federal Bureau of Outdoor Recreation's Land and Water Conservation Fund and the Massachusetts Self-Help Program.

The Land and Water Conservation Fund

Established in 1965, the Land and Water Conservation Fund (L&WCF) is administered by the U.S. Department of the Interior's Bureau of Outdoor Recreation (BOR). This Fund allocates federal money to the states, and through the state, to political subdivisions, for acquisition and development of significant public outdoor recreation areas. The purpose of the program is to assist in the preserving, developing and assuring of access for all citizens to outdoor recreation resources.

Projects eligible for funding under the L&WCF Program must be for outdoor recreation. In these cases, BOR can reimburse agencies up to 50 percent of the cost of acquisition of land and development of facilities for outdoor recreation. The Division of Conservation Services in the Department of Natural Resources reviews and coordinates all BOR applications in Massachusetts.

Projects submitted by local and state agencies must be in accord with the needs defined in the Statewide Comprehensive Outdoor Recreation Plan (SCORP). In brief, SCORP is a general plan recommending priorities for acquisition and development of recreation land throughout the Commonwealth. Municipalities receiving BOR money must also have on file with the Department of Natural Resources an approved conservation-recreation open space plan or have a planning program underway.

Since inception of the L&WCF, the Bureau of Outdoor Recreation has allocated over $25.5 million to Massachusetts, with an additional $4.4 million slated this year. Over 15,300 acres of land have been

Publication of this Document Approved by Alfred C. Holland, State Purchasing Agent.

acquired and numerous parks and playgrounds developed with BOR funds. BOR-assisted projects include state and local parks and playgrounds, swimming pools and open skating rinks, ocean beaches, golf courses, tennis courts, wildlife and hunting areas, campgrounds and fishing and boating sites.

One of the largest portions of BOR assistance has been funnelled to the Department of Natural Resources to support the development of swimming pools, particularly in urban areas where water-based recreation is sorely lacking. Of the approximately $13.3 million in BOR funds received by the state for recreational development projects, about half this amount has gone into the DNR's pool program. At an average cost of pool construction from $350,000 to $400,000 per facility, the Department has built and now manages 18 pools throughout the Commonwealth.

The Self-Help Program

Among the most successful grass-roots conservation organizations in the nation are Massachusetts' conservation commissions. Out of 351 cities and towns in the Commonwealth, 324 communities now have conservation commissions. Composed of three to seven members appointed by the selectmen or mayor, a conservation commission is entrusted to preserve a locality's meadows, forests, marshes, fields and flood plains — in short, a community's open spaces.

The commissions protect and preserve open space principally through the acquisition of land.

Any town or city having a conservation commission and an approved conservation-recreation open space plan is eligible to receive financial assistance under the Massachusetts Self-Help Act. Administered by the Division of Conservation Services, the Self-Help Program offers towns and cities up to 50 percent reimbursement for the cost of land purchased for conservation and such passive outdoor recreation purposes as hiking, fishing and nature study. Unlike the BOR program, Self-Help only assists in the acquisition of land — not in any development on the site.

Since the inception of the Self-Help Program in 1961, the state has reimbursed municipalities over $6.2 million for 536 projects involving the acquisition of nearly 17,700 acres. These acquisitions include inland and coastal wetlands, flood plains, streams, ponds, fresh and saltwater beaches and woodlands. Self-Help received a big financial boost this year when the Massachusetts Legislature passed a $5 million bond issue to fund the Program.

Double Funding

BOR's Land and Water Conservation Fund and the Self-Help Program may be applied together. In that case a community may receive up to 75 percent reimbursement for the cost of purchasing land.

For example, a community could receive 50 percent reimbursement from BOR and another 25 percent from Self-Help — making a total of 75 percent reimbursement — for the cost of purchasing land that included opportunities for such passive outdoor experiences as hiking, horseback riding, fishing and swimming. However, any development of recreational facilities on the land, such as swimming pools, open skating rinks or trail construction can only be borne by BOR's program.

For further information about the Land and Water Conservation Fund and the Self-Help Program contact the Massachusetts Division of Conservation Services. Telephone: (617) 727-3170.

Local agencies may be interested in obtaining from the Division a helpful document: **Conservation/Recreational Planning Requirements for Municipal Participation in the Federal Land and Water Conservation Fund and the State Self-Help Program.**

LAND FOR RECREATION

Outdoor recreation is an integral part of our well-being. We need it to sustain both mind and body. Yet throughout the state, a shortage of recreational opportunities exists, which is particularly acute in urban areas where there are too many people for too few open spaces. Whether in a sleepy Berkshire village or in bustling metropolitan Boston, people want more places to go swimming, picnicking, hiking, riding, camping, boating and fishing.

To meet these needs, the SCORP Report estimates that between 1972-76, federal and state agencies will spend in the Commonwealth about $132 million for the acquisition and development of open space and outdoor recreational facilities — 60 percent of this sum to be spent in densely populated eastern Massachusetts. To this sum, municipalities will add another $53 million.

But despite these expenditures, it is doubtful supply will ever catch up with demand. For projections indicate our outdoor recreational needs will double by the year 2000 — a need level which cannot be realistically accomodated. Yet because of its importance to the human condition, providing land and facilities for outdoor experiences is a goal that must be continually pursued.

McConnell Park — Boston — Located in Savin Hill, a working-class neighborhood in the Dorchester section of Boston, McConnell Park was a typical example of an urban recreational area — ancient equipment, broken drainage system, eroded ballfields and crumbling benches. But with nearly 10,000 people in the neighborhood and a sub-standard ratio of 1.4 acres of open space per 1000 persons, the park was heavily used and improvement was badly needed. So the Boston Parks and Recreation Department stepped in to rebuild the park, constructing new baseball diamonds, backstops, bleaches, and a drainage and water system. Cost of development: $97,000 — half of which was reimbursed by BOR's Land and Water Conservation Fund.

Windsor Lake — North Adams — Although the Berkshires has a number of lakes and ponds,

photo credit: Boston Parks & Recreation Dept.

LAND FOR CONSERVATION

Inland wetlands like the **Dedham Marshes** act as natural catch basins. By storing then releasing rainwater slowly, wetlands prevent flash floods downstream — floods that could seriously damage roads, houses, and factories. In the U.S. every year there is more than $700 million in flood damage. The U.S. Army Corps of Engineers — which in the last 30 years has spent more than $4 billion in flood control projects — now advocates that one of the most effective and economical approaches to flood control is the acquisition of large natural wetlands. This is far less expensive than dredging channels and constructing and maintaining dams.

Besides flood control, the slow release of the water from the wetland enables some of the stored water time to sink deep into the ground where it replenishes ground-water supplies, keeps springs bubbling, and fills wells. Draining, filling or paving over a marsh or swamp will destroy its natural ability to store water. Instead the water will rapidly run off wasted over the surface of the earth — lost to reservoirs, lost to agriculture, useless to industry. In dollar terms — millions down the drain.

Contrary to popular conception, a wetland is far from a wasteland or breeding place for flies and mosquitoes. Acre for acre wetlands are the most productive plant and wildlife environments in the world, providing food, shelter, and nesting grounds for countless species of fish, birds and mammals. Whenever a wetland is filled in, the delicate web linking wetlands to streams and rivers and then to the sea is strained or torn apart. The quality of river water declines as water flow becomes uneven; air pollution over cities worsens as trees and plants, which previously aided in cleansing the air, have been removed; and the marine life of the estuary decreases, casualties of the altered activities upstream.

Then too, the aesthetics of wetlands affects the economics of towns. Compare the property value in towns where there are considerable wetlands with those of municipalities in which the marshes have been filled in for housing, roads and parking. Perhaps most important wetlands provide opportunities for hunting, fishing, biking, bird-watching, blueberry picking — for so many different kinds of outdoor recreation. Pave over a "wetland wasteland" and you destroy one more of the fast disappearing opportunities for man to breathe, smell and feel a natural environment. The Town of Dedham's 74-acre marsh land acquisition, assisted with $37,000 in Self-Help funds, is one small, yet vital step in protecting these natural areas.

LAND FOR HERITAGE

Holy Hill — Harvard — Out of a thousand or so alive at the turn of the century, only 12 Shakers are left — the last remnants of a religious sect that flourished in North America. At their height in the 1850s, Shakers numbered members living in communal societies stretching from Maine to Kentucky. Today only two Shaker communities remain — Canterbury, New Hampshire, with three residents and Sabbathday Lake, Maine, with nine. A third community in Hancock, Massachusetts is a recreated commune called Shaker Village.

The first American Shaker community was founded in 1774 in what is now Watervliet, New York by Mother Ann Lee and eight disciples, emigre English Shakers. The sect (officially named the United Society of Believers in Christ's Second Appearing) first spread in New York and east through New England; then to Ohio, Indiana and Kentucky.

At one time, there were two other Shaker communities in Massachusetts — in Harvard, organized in 1791 and disbanded in 1919; and Shirley, 1793 to 1909. Recently the Town of Harvard Conservation Commission moved to restore a piece of its Shaker heritage, purchasing an 86-acre tract of land that includes Holy Hill, the old Shaker Worship area or Dancing Ground.

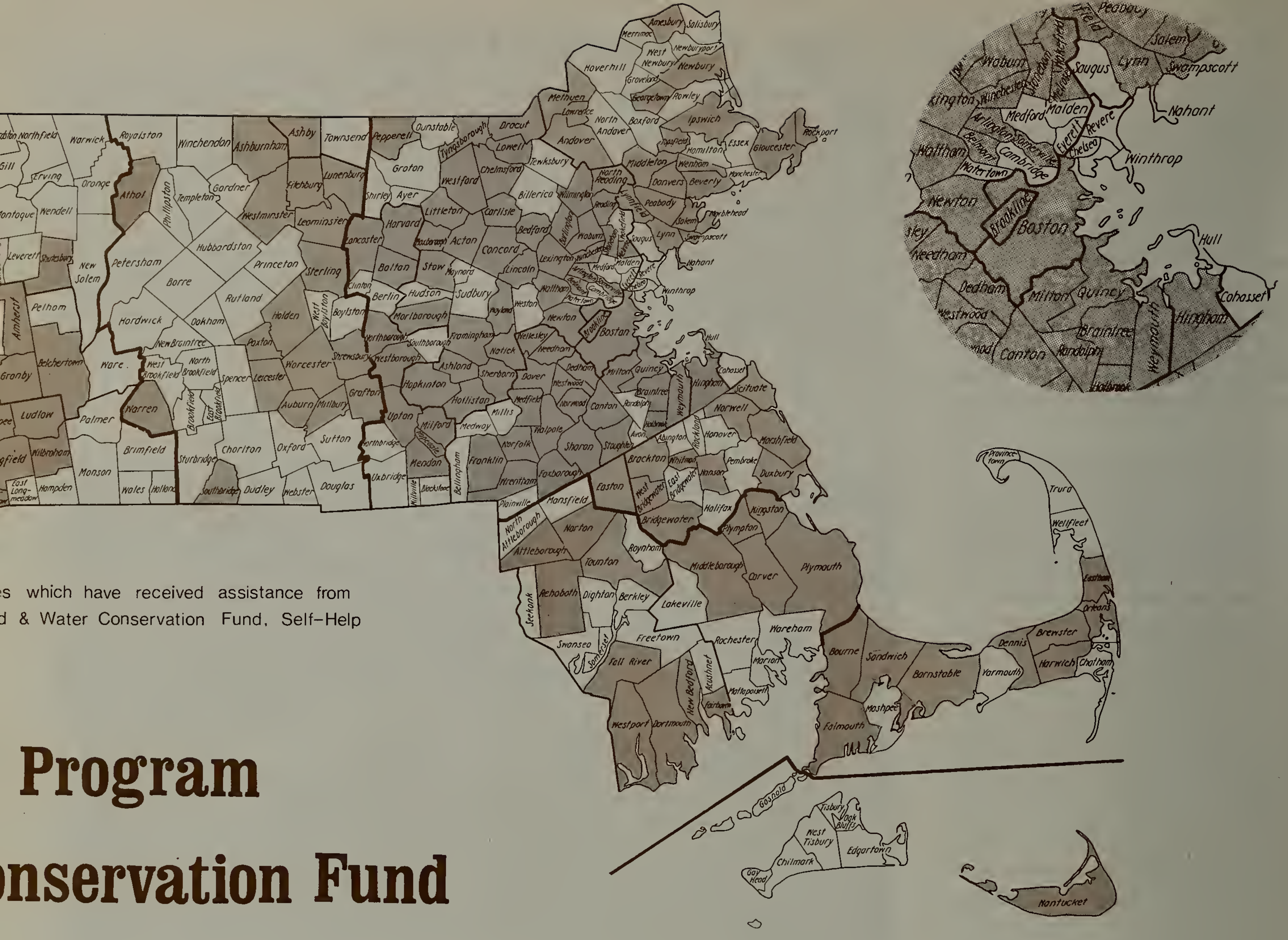
The Shaker heritage was both spiritual and material. They preached that the City of God was within reach, heaven could be brought down to earth if men and women would leave off sin, obtain the Christ spirit directly and regenerate themselves in this world. Originating from the belief that the gift of understanding God and His Ways comes through "agitation of the body," (hence the name Shakers), worship was expressed in singing, marching and dancing.

At the same time, Mother Lee preached, "Put your hands to work as well as your hearts to God." And the Shakers did just that as their utopian society flourished like no others. From their communes came a cornucopia of dairy products, corn, apples, herbs and canned fruits and vegetables. They were the first to package and market garden seeds in this country; and they invented the buzz saw, threshing machine, rotary harrow and the clothes pin.

From their cottage factories also came clothing, rugs, brooms, buckles, buttons and baskets, pens, pipes, pots and pans. The craftmanship and simplicity of design of Shaker furniture is still renown throughout the world.

Shakers at Worship

But the strict discipline of the commune, such as the rule of celibacy forced the Shakers to seek converts outside of the community in order to keep growing. The task of proselytizing proved too much. As a result, Shaker communities went into decline after 1860. The Holy Hill acquisition, assisted with $85,000 in BOR aid and $42,500 in Self-Help funds, preserves one of the few remaining traces of this short-lived, but significant movement in our history.



es which have received assistance from
d & Water Conservation Fund, Self-Help

Program
nservation Fund

Boston Harbor Islands — Boston Harbor, an area of some 50 square miles, is bounded by 180 miles of shoreline and dotted with 30 islands totalling about 1200 acres. Lying within a 25-mile radius of a population of more than 3 million, the Harbor Islands are now being developed into a unique, ocean-based urban park.

Last year, the Department of Natural Resources completed public ownership of the islands, purchasing 13 islands at a cost of $700,000 — half of which was reimbursed to the state by BOR's Land and Water Conservation Fund.

Among some of the key islands acquired — and currently under development — are 16-acre Gallops Island which has a good sandy beach and a large hill overlooking the entire Harbor; 50-acre Grape Island, located near the mouth of the Weymouth Back River, with several gravel beaches, walking trails and group camping offering recreational enjoyment; 35-acre Bumpkin Island, a single drumlin off Hull that affords excellent opportunities for camping, hiking and viewing Hingham Bay; and the Brewsters, all of which (with the exception of Great Brewster which is a large drumlin) are small, jagged outcrops of solid bedrock reminiscent of the Maine coast. Acquisition of the Brewsters, the outermost islands of Boston Harbor, assures preservation of both a bird sanctuary and a rare scenic environment.

much of its water area is unavailable for recreation use. This is because the ponds and lakes in this region are needed for water supplies or public access is restricted by private shoreline ownership. According to the SCORP Report, swimming and boating opportunities are sorely lacking in the Berkshires.

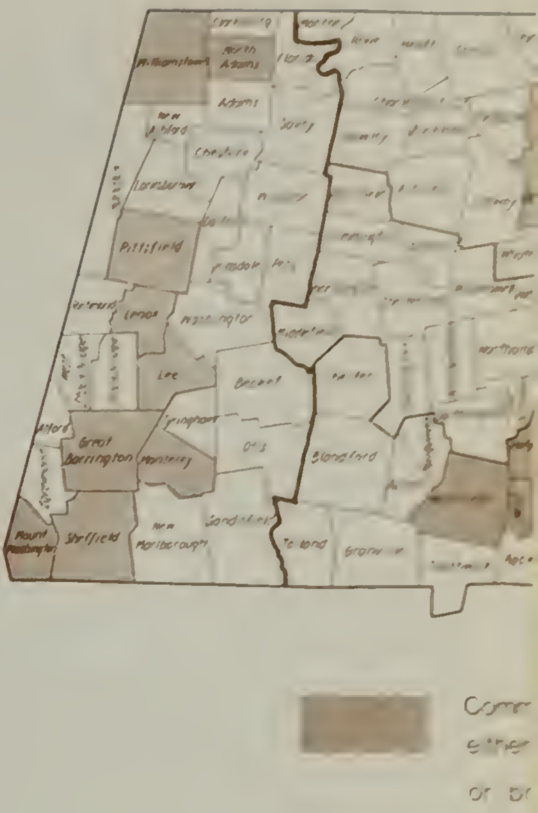
For its part, the city of North Adams has attempted to fill these recreational shortages. With a $121,000 reimbursement from BOR and Self-Help assistance in acquiring the site, the city has developed and now operates Historic Valley Park Family Campground on Windsor Lake. Containing within its borders 30-acre Windsor Lake, 100 campsites, trails and boat rentals, the park offers inexpensive opportunities for camping, swimming, hiking and boating. Winter camping at Windsor Lake is also popular with outdoor opportunities for ice fishing, skating and skiing.

The Five Hundred Thousand Dollar Club

Over half of the millions in BOR reimbursements have gone to state agencies — most of this amount, nearly $12 million, to the Department of Natural Resources. The rest of the BOR pie was shared by municipalities. The following communities have received more than $500,000 in BOR funds for acquisition, development or both.

Community	BOR Reimbursements Received
Boston	$1.1 million
Quincy-Milton (Norfolk County)	957,000
Lincoln	873,700
Sandwich	773,000
Needham	606,500
Lynn	596,000
Brockton	536,300

photo credit: No. Adams Transcript



Self Hel

Land & Water

photo credit: Karen Waggoner

Mill River Recreation Area — Amherst — One of the most diversified outdoor recreational facilities in the state, Mill River consists of a swimming pool and bathouse, combination open skating rink and basketball court, tennis courts, baseball, football and soccer fields and picnic areas. Cost for development of Mill River: $615,000 — half of which was reimbursed by BOR's Land and Water Conservation Fund.

Adding to the diversity of the area is that next to this 13-acre recreational area is 70 acres of conservation land. This land purchased by the Amherst Conservation Commission with Self-Help funds, has multiple-use trails and Puffer Pond, a local swimming hole. Together the recreation facilities and conservation land offers the opportunity to enjoy a full range of outdoor activities.

The Briar Patch — Sandwich — Every now and then, wrote Sandwich author Thornton W. Burgess in The Dear Old Briar-Patch, old Farmer Brown would frown on a certain patch of briars lying on his property and threaten to clear all the bushes away. But whenever he doubted the worth of this land, his son, a true conservationist, would advise him to save the patch: "It is the safest place anywhere for some of our most useful friends in fur and feathers, You know it is."

The people of Sandwich know it is too. So the town Conservation commission purchased the 57-acre patch made famous around the world by Burgess as the inspirational setting for his children's nature books and animal stories.

The $200,000 purchase (which also includes the 250-acre Ryder Property on Wakeby Pond) — 75 percent of which was reimbursed through BOR and Self-Help funds — is insurance to the townspeople and conservationists everywhere that the Old Briar Patch will never fall to modern day Farmer Browns who would plow under the patch in favor of development, destroying the homes of such Burgess characters as Reddy Fox, Jimmy Skunk, Johnny Chuck, Billy Mink, Bobby Coon, Striped Chipmunk, and of course Peter Rabbit.

Today's Briar Patch is a combination of woodlands and open space ranging in level from low swampland to a 130 foot height that offers a spectacular view of Cape Cod Bay. Stone fences on the property offer evidence of past farming and a huge half-split boulder with splitting irons still in place echo another age. The land boasts various tree species and large patches of thick undergrowth where Peter Rabbit had a few of his many hiding places.

Burgess grew up loving these natural surroundings. Later, in telling nature stories to his own small son, he invented magic names for these boyhood places like the Smiling Pool, Green Forest, Green Meadows, the Crooked Little Path and the Old Briar Patch. The animals he observed in these settings were both the inhabitants as well as main characters in his stories. In his 50-year career, beginning in 1910 as a children's author, Burgess published more than 170 nature books and 15,000 animal and bedtime stories.

Borderland — Sharon and Easton — Formerly the Oakes Ames Estate, the private preserve of one of New England's most illustrious families, Borderland State Park came into the public domain two years ago when the Department of Natural Resources purchased the estate for $1.2 million, half of which was reimbursed through the Land and Water Conservation Fund.

The park is comprised of 1250 unspoiled acres of oak, beech and pinewoods, ponds, cedar swamps, glacial rocks and upland meadows. On the land stands the Ames Mansion, built in 1910 by Oakes and Blanche Ames, descendents of a long line of industrial pioneers, governors and nation-builders.

Designed by Blanche Ames in the manner of an English country house, the mansion was constructed from stones cut from the stone walls of Borderland. It was the first house in the area to have electricity and an automobile garage. Its many windows and porches were designed to create a sense of space and communion with the outdoors. Inside the mansion the visitor discovers a superb library and a fascinating mixture of Oriental, European and American antiques — a thousand mementos of the Ames family history, a history inseparable from that of the nation.

The Hundred Thousand Dollar Club

Communities that have received more than $100,000 in Self-Help Funds.

Community	Acres Purchased	Reimbursement
Lincoln	743 acres	$574,100
Duxbury	606	306,000
Concord	457	291,600
Lexington	333	274,300
Carlisle	520	239,700
Newton	103	214,300
Burlington	167	153,300
Andover	283	147,700
Acton	462	145,600
Belmont	70	139,000
Harwich	257	133,500
Woburn	106	129,700
Wayland	189	117,800
Sandwich	360	115,000
Framingham	90	114,800
Falmouth	122	110,300
Barnstable	663	110,100
Pittsfield	414	105,800

DIVISION DIRECTORS

CONSERVATION SERVICES Joel A. Lerner	727-3170
FORESTS AND PARKS Bruce S. Gullion	727-3180
LAW ENFORCEMENT Kenneth A. Crossman	727-3190
MARINE FISHERIES Frank Grice	727-3193
MINERAL RESOURCES Richard Boehmer	727-3260
WATER POLLUTION CONTROL Thomas C. McMahon	727-3855
WATER RESOURCES Charles F. Kennedy	727-3170
ACQUISITION & ENGINEERING Richard J. Correia	727-3174

RESOURCE
Published by
MASSACHUSETTS DEPARTMENT
OF NATURAL RESOURCES,
DIVISION OF CONSERVATION SERVICES
Leverett Saltonstall Building
100 Cambridge Street
Boston, Mass. 02202

DAVID KALES, Editor
LORRAINE A. AGRI, Graphics Coordinator
JACK WOOLNER, Photographer
JAMES E. HEALEY, Information & Publicity
JULIE GUINN, Reporter
LUCILLE M. SHEEHAN, Research
WILLIAM DEEHAN, Research

EA1.4: 16

ENVIRONMENTAL
RESOURCE

Massachusetts Department of Natural Resources Arthur W. Brownell, Commissioner Nov. — Dec. 1974 Number Sixteen

Government Documents
Collection
[illegible] 1975
University of Massachusetts

Massachusetts Minerals:

NOTES FROM THE UNDERGROUND

"From an economic point of view, limestone and iron of the Berkshires form the principal mineral riches of Massachusetts. Nothing can at all compete with these, except the granites at Quincy and on Cape Ann." So wrote Edward Hitchcock, State Geologist, in **Geology of Massachusetts**, a report submitted to the Commonwealth in 1841.

Hitchcock was indeed accurate in identifying limestone and granite as the "principal mineral riches of Massachusetts." But later in the report, he became carried away in extolling the abundance of other mineral resources in the state — an abundance the eminent geologist believed could support the development of a nation which was then pushing westward to the Pacific.

Hitchcock anticipated that huge coal fields would be opened up in Norfolk and Bristol Counties. He foresaw Hampshire County as a major supplier of tin and lead to New England; Franklin County, a supplier of copper. From mines in Warwick, Hawley, Bernardston and Montague would come iron; from Chester, chrome.

Unfortunately for Massachusetts, Hitchcock's optimism never panned out. Although the rocky earth of Massachusetts would seem to be ideally suited for supporting a flourishing mining industry, the state has, in fact, been poorly endowed with commercially valuable mineral resources — especially compared to other regions in the country. For every $100 the nation earns from materials dug from the earth, Massachusetts contributes less than seven cents.

But even though the commercial value of the state's mineral production is nothing earth-shaking, Massachusetts does have a wide variety of minerals ranging from sand and clay to quartz and granite to semi-precious stones and, yes — even gold. The myriad rocks and stones offer more than merely collectors' items for curious rock hounds. The minerals, as well as the abandoned mines where many of them are found, point up a rich heritage of local history and folklore.

Sand and gravel: An abundance offshore

Abandoned Mines and Quarries

Many of the state's abandoned mines and quarries are limestone and granite which were mined extensively for building materials in the 18th and 19th centuries. Rollstone Hill Quarry, an old abandoned granite mine in Fitchburg, is a rock haven for collectors willing to brave bugs, snakes and steep ledges in search of such gems as green and pink tourmaline and aquamarine beryl.

A colonial lime pit in Newbury, known as the Devil's Den, contains, among many interesting minerals, serpentine. The quality of serpentine here is considered so fine that in the 19th century Yankee traders reportedly sold the mineral to the

5M-12-74-082629 Publication of this Document Approved by Alfred C. Holland, State Purchasing Agent. Est Cost Per Cop[illegible]

Chinese who in turn exported it back to the U.S. in the form of vases and figurines.

Lead was also mined throughout the state in colonial times. In fact, galena, the ore from which lead and silver are derived, was first discovered in this country in Leverett in 1679. The Leverett Lead Mines never proved very profitable, but it was for a time the largest lead mine in the U.S. During the Revolutionary War the mine produced large quantities of lead for bullets used by the Continental Army. In the 19th century the mine's ownership changed hands several times until 1870, when a post-Civil War drop in lead prices forced it to close down. Minerals found today at the Leverett Lead Mines are galena, barite, sphalerite, quartz and a host of other fine crystals.

One of the most significant historical sites is the Chester Emery Mines in Chester. First opened in 1856 as an iron mine, the company soon discovered the ore contained a high percentage of corundum, and converted operations to processing emery from corundum. The company then went on to become one of the world's leading producers of emery and grinding wheels.

Although the Emery Mines have been closed since 1914 and hundreds of collectors have since picked over the area, mineralogists claim that good specimens of many minerals can still be found. Among these are azurite, chlorite, hornblend, sapphire, tourmaline, and the more sought-after, diaspore and margarite. Diaspore exhibits a beautiful colorless, rose or violet bladed crystal; while margarite is distinguished by its pink-to-lavendar pearly surface.

GOLDFINGER

Through the ages, the mineral that has been man's eternal temptation — even damnation — has been gold. Folks in Massachusetts have proved no different in this respect. Tantalized by tales of buried pirate gold, Bay Staters have scoured our shores and estuaries for four centuries in search of Captain Kidd's legendary treasures. In the late 1700s, a gold digging epidemic swept across the state, driving people to mystical seances and divining rods in their mostly futile quest for gold. Across the state today are abandoned gold mines, many of them just holes in rocky pastures made by some farmer seeking greater riches than he could glean from his stubborn soil.

In modern times, the quest continues; not only do the legends persist, but some gold actually has been found in the state. In fact, productive gold mines operated into the 20th century in such towns as Blandford, Brookfield, Wales and Gardner. In New Marlboro, the Cleveland Mine yielded some of the highest producing gold ore in New England. In more recent times, the Barlow Brothers Co. operated a mine in the Quabbin Valley before the area was flooded in the 1930s to provide for Greater Boston's water supply.

Photo Credit: Jim Anderson

Good pickins' in Newbury

Today, not only is gold still mined by amateurs in such places as Blandford, Brimfield and Plainfield, but it is panned from the alluvial deposits originally brought down by the glacier and dumped into streams. Nuggets have recently been discovered in a stream in Bernardston and in Fife Brook in Florida along the Mohawk Trail by people who pan for a hobby.

Even more surprising was the news from Wrentham, where a woman recently announced a rich gold vein lay under her land. And a man is known to be selling gold found near Quabbin Reservoir. But for most would-be Goldfingers — including those dreamers who have spent a lifetime searching for gold at places like Dungeon Rock in MDC's Breakheart Reservation in Saugus or on Forty Steps Beach in Nahant — the only pot found at the end of the rainbow has been one filled with "fool's gold."

THE MINERAL BELT

Although the heyday of mining in Massachusetts has long passed, the search for strategic minerals in World War II led to the reactivation of several mines in the so-called "mineral belt" in the western part of the state. This belt extends from West Cummington on the Westfield River some 15 miles north to Rowe on the Deerfield River. Two of the most well-known of these reactivated mines were the Betts Manganese Mine in Plainfield and the Davis Pyrite Mine in Rowe. The Davis Mine, in fact, was probably the most successful mine in Massachusetts, having operated from 1882 until 1910. In that period, it produced more than 25,000 pounds of copper and 335,000 tons of pyrite. The village of Davis was built around the mine which at one time employed as many as 200 men.

Both mines are now abandoned, but provide some of the best sites in the state for collectors. The Betts Mine yields a number of minerals including a beautiful pink rhodonite stone. The Davis Mine contains fine specimens of pyrite, chalcopyrite and a rare green octahedron mineral called gahnite.

Which is not to say that Georges Bank presents no environmental hazards in drilling for oil. The CEQ study says that the probability of oil spills from drilling in the Georges Bank area is fairly low. However, if a spill did occur, the study reports, it could wash ashore on Cape Cod, one of the most valuable recreation areas in the Northeast. It would also threaten extinction for already endangered species such as the Osprey, Atlantic salmon, Atlantic sturgeon and Ipswich sparrow.

Moreover, refineries that in all likelihood would be built to handle the oil would greatly increase air pollution — as much as 17 times current pollution levels. Water quality no doubt would decline as more people, attracted to economic opportunities associated with refineries, moved into the already crowded coastal communities. This increase of population would also place more strain on land use and governmental services.

But the most vital questions of offshore drilling still remain unanswered. Would Massachusetts and other New England states derive any economic benefits from the leasing of oil lands off their shores? Would they get a share of oil and gas revenue from Georges Bank? Will they be assured a supply of cheaper energy from offshore oil? Or would Massachusetts and New England be taking all the environmental risks without a chance of any economic gains?

In any event, one thing is clear; there must be careful management of the coastal zone so that not just oil, but all its many resources are used wisely. Otherwise, perhaps even more vital resources from the sea like food and protein will be permanently sacrificed to the juggernaut of national energy independence.

PUBLIC ENEMY #1

Vandalism — the mindless, wanton destruction of public forests, parks and recreational facilities — has become a major problem for Massachusetts conservationists and park officials. The Department of Natural Resources estimates that in 1974, vandalism in the State Forests and Parks system cost the Commonwealth more than $200,000 — about the same amount it costs to operate a park facility for an entire year.

The Metropolitan District Commission has worse news to report. Damage to its recreational facilities ran as much as $750,000 last year. And for both agencies the costs of vandalism keeps climbing as it becomes painfully apparent that a small, but growing minority just can't enjoy the state's natural resources without destroying them.

To make matters worse, the present economic inflation means that every time broken windows, stolen trucks or radios must be replaced, the costs go up. A building erected only a few years ago at a cost of $40,000, now costs $60,000 to replace.

The fact is that total costs of vandalism are impossible to calculate, because damage from a few major destructive acts can set back an entire recreational program. Some examples:

In Robinson State Park in Agawam, vandals using a bulldozer and back hoe found on the premises leveled a bathouse, concession stand and comfort station, leaving only a chimney standing. Cost of destruction: $100,000.

At Horseneck Beach Reservation in Westport, trouble-makers set fire to a building resulting in $16,000 in damages. In Quinsigamond State Park in Worcester, a gang burnt down the bathouse three times, totalling over $25,000 in damages.

Rinks and pools seem to be a favorite target for vandals. The destruction there goes beyond the ordinary nickel 'n dime variety that includes such damage as throwing rocks, paper and tar down toilets or into pools, breaking faucets, tearing sinks and telephones off walls or poking holes in ceilings and walls with skates and hockey sticks.

The state skating rink in Brockton was put to the torch, causing some $1000 in damage. In Lowell, hoodlums locked a rink employee in a room and looted all the vending machines. And while the ice was being re-surfaced at the Peabody rink, its pro-shop was cleaned out lock, stock and barrel.

Not surprisingly, the greatest amount of destruction takes place in urban areas. Authorities in Springfield report extensive damage to municipal recreational facilities; and in Worcester, destruction wrought by one gang is threatening to virtually wipe out the city's park system. Alarmed officials are asking for a $200,000 appropriation to beef up law enforcement of the Worcester park facilities.

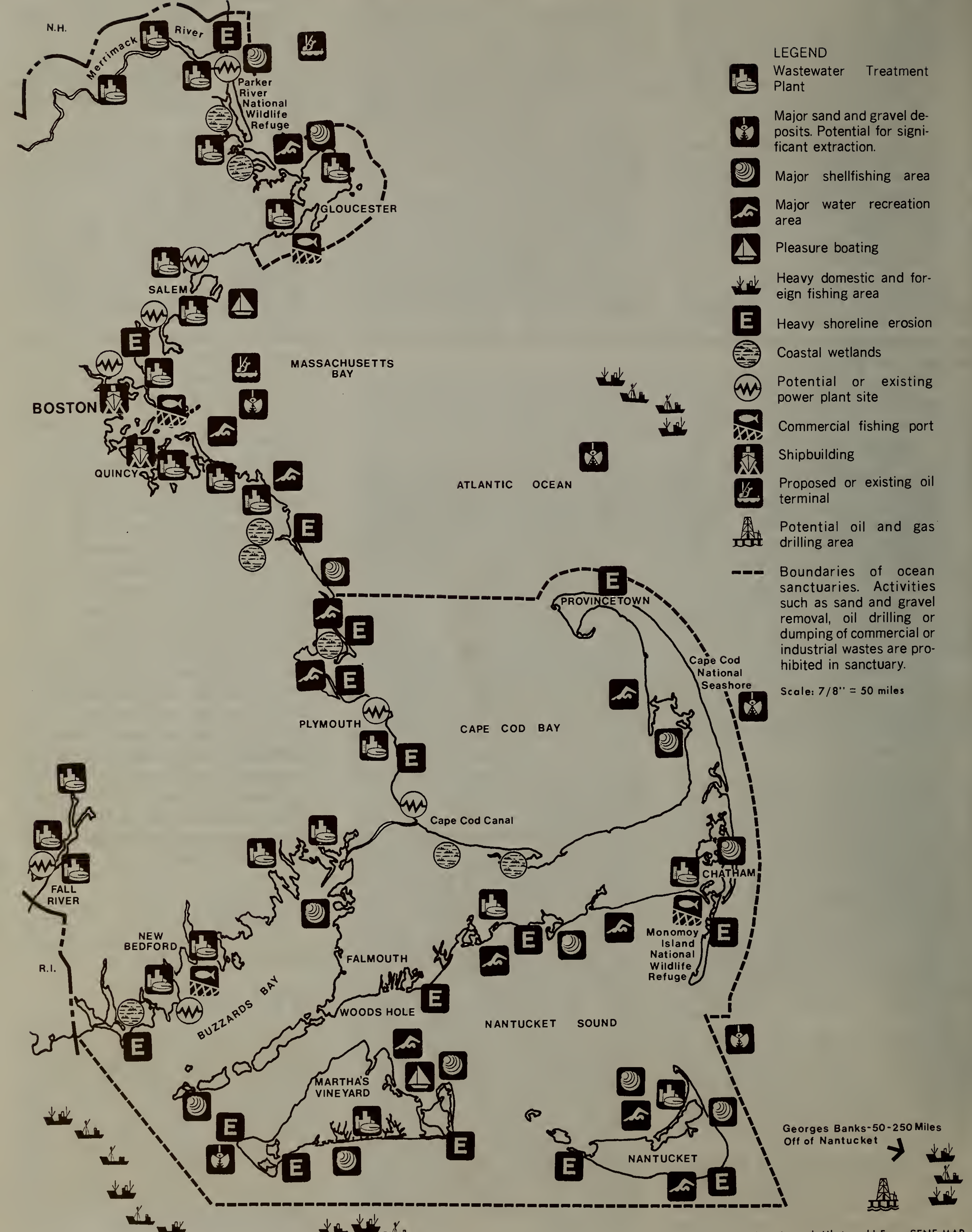
But the costs of vandalism cannot be measured merely in terms of money. Time needed for repair of damage must be taken from constructive maintenance projects. One MDC official estimates that many park employees spend as much as half of their time repairing damage. "You put a fence back up only so many times before you wonder why you're bothering to put it up at all." grumbles a park employee.

Can anything be done to stem the tide of vandalism? More personnel and funds for law enforcement and better cooperation between state and local enforcement authorities are partial answers. But any real solution to the problem must go beyond these remedies to instill in the public conscience as much concern for our parks and recreational facilities as for our own backyard.

ROCKY RACCOON'S REVIVAL

The "masked bandits" strike at night, destroying vegetable gardens, tipping over garbage cans, raiding even kitchen pantries. The brazen marauders, furry creatures with pointy ears, shiny noses and black patches around the eyes are — you guessed it — raccoons. More and more they are moving into suburbia in quest of the good life.

THE COASTAL ZONE


LEGEND
Wastewater Treatment Plant
Major sand and gravel deposits. Potential for significant extraction.
Major shellfishing area
Major water recreation area
Pleasure boating
Heavy domestic and foreign fishing area
E Heavy shoreline erosion
Coastal wetlands
Potential or existing power plant site
Commercial fishing port
Shipbuilding
Proposed or existing oil terminal
Potential oil and gas drilling area
Boundaries of ocean sanctuaries. Activities such as sand and gravel removal, oil drilling or dumping of commercial or industrial wastes are prohibited in sanctuary.
Scale: 7/8'' = 50 miles
N.H.
Merrimack River
Parker River National Wildlife Refuge
GLOUCESTER
SALEM
MASSACHUSETTS BAY
BOSTON
QUINCY
ATLANTIC OCEAN
PROVINCETOWN
Cape Cod National Seashore
PLYMOUTH
CAPE COD BAY
Cape Cod Canal
FALL RIVER
CHATHAM
NEW BEDFORD
R.I.
FALMOUTH
Monomoy Island National Wildlife Refuge
BUZZARDS BAY
WOODS HOLE
NANTUCKET SOUND
MARTHA'S VINEYARD
NANTUCKET
Georges Banks-50-250 Miles Off of Nantucket

Source: Adopted By Joseph Ulatowski From SENE MAP

ROAD CUTS

With so many abandoned mines picked over thoroughly by collectors, road cuts have provided a major new source of mineral discoveries in recent decades. The blasting of the Sumner Tunnel under Boston Harbor and the construction of roads through Powderhouse Hill and Davis Square in Somerville yielded pyrites, a wide variety of quartz crystals and prehnite, a fairly uncommon, green-colored mineral.

In the construction of Route 495 near Haverhill, pyrite veins as big as railroad ties were unearthed in the blasted ledge. The pyrite, from which a major industrial product — sulphuric acid — is made, was in such large quantity that trucks came from all over the Northeast to haul it away.

At a road cut in Newbury, John Bartolomeo, Natural Resource Officer with the Department of Natural Resources and veteran rock collector, discovered amethyst — a semi-precious violet-colored quartz. Another significant find occurred when Route 128 was being built near Peabody, where a deposit of babbingtonite was found.

This shining black crystal has only appeared in a few areas of the world. Specimens found in Peabody, Woburn, Lane Traprock Quarries in Westfield and other places in the state are said to be superior to those from California and Australia — two areas where the stone has turned up. Bartolomeo and other experts would like to see Massachusetts adopt babbingtonite as the official state stone since the Commonwealth, unlike other states, presently does not have one.

SEAWARD HO!

When all is said and done, however, the only minerals Massachusetts really has in any abundance are just plain sand and gravel. Together, these two minerals, used for the construction of roads and buildings, account for $35 million of the total $50 million worth of minerals produced in the state each year.

But even this mineral resource is dwindling while its price keeps rising. Within a 20-mile radius of Boston, the price of construction-grade sand and gravel has soared so high in the last five or so years that it is cheaper to haul it in from New Hampshire.

Spurred on by this worsening situation, the Commonwealth is now looking to its coastal waters as a potential source of sand and gravel. (See Coastal Zone Map.) A survey conducted by the State Division of Mineral Resources and Raytheon Co. three years ago reports that more than 300 million cubic yards of potentially exploitable sand and gravel lies off the Massachusetts coast. (These huge amounts of sand and gravel are thought to have been deposited by glaciers and reshaped by ocean waves and currents.)

Presently though, because of the unknown impact of mineral extraction on other ocean resources, a legislative ban (Chapter 567, Acts of 1970) has been placed on all marine mining in Commonwealth waters until the Department of Natural Resources obtains information on its ecological effects. The Department is now collecting and evaluating this information.

If offshore mining becomes a future reality, the day may yet come when the mineral wealth of Massachusetts becomes more than just the object of a collector's curiosity. Perhaps a small part of Edward Hitchcock's optimistic projection made so many years ago of Massachusetts' mineral production, will be realized after all.

THE ENERGY JUGGERNAUT

Just about every conceivable natural resource, from ecologically fragile marshlands to ordinary sand and gravel, lies in the coastal zone. (See Coastal Zone Map.) And just about everyone, from the solitary beachcomber to the Soviet Government, vie for one or more of the area's resources.

With the U.S. Department of Interior's recent announcement that it plans to lease out the Georges Bank area of the Outer Continental Shelf for oil and gas drilling sometime in 1976, the competition will get even fiercer. While Georges Bank, lying 50-250 miles off Nantucket, is not in the coastal zone, support facilities and personnel needed for drilling, transportation and storing oil or gas is certain to put greater pressure on the already heavily exploited resources along the coast.

No one is certain when drilling will begin or just how much oil and gas even exists in the Georges Bank trough. But it now appears inevitable that exploratory drilling will take place. For while Georges Bank area ranks behind the Alaskan oil fields in potential oil and gas abundance, it poses fewer environmental hazards while offering the economic advantages of shorter lines of transportation and market distribution.

Moreover, Georges Bank may be the most desirable drilling area of any place off the densely populated, energy-deficient eastern seaboard. According to a study by the President's Council of Environmental Quality, the environmental risk of drilling and transporting oil from Georges Bank is less than that from any other area off the Atlantic coast.

Photo Credit: New England River Basins Commission

Offshore oil: Will Massachusetts reap any benefits?

With the raccoon population growing, a rising number of complaints from urban areas across the state have poured into local police agencies and the Department of Natural Resources' Division of Law Enforcement. There are raccoons in the attic, raccoons in the cellar, raccoons in the chimney, raccoons in the garden. They have even been spotted scurrying down the main streets of big cities like Boston, Lowell and Springfield.

Says Frank Graves, Assistant Director, Division of Law Enforcement, "Raccoons are too abundant for their own good." Indeed they are. Because of their overabundance, the animals are currently susceptible to a virus epidemic called "herpes disease." In Swampscott and Lynn, two communities where the outbreak has been severe, residents noticed stricken raccoons staggering across lawns, foaming and frothing at the mouths. Needless to say, these incidents have prompted more complaints and more queries as to what's going on.

What is happening is "Rocky Raccoon's Revival" — particularly in the suburbs and cities. There are several explanations for this phenomenon. First of all, raccoons are highly adaptable animals, equally at home in city dumps, sewers and culverts as well as in country trees and rocky dens. Because raccoons are nocturnal animals who sleep during the day and forage at night, attempts to control them are easily frustrated since "coon hunts" must take place in darkness of night.

Raccoons have an excellent sense of smell, making it as easy for them to track down the richly-laden garbage cans in suburban backyards as if they were taking a trip to the supermarket. Contrary to popular belief, raccoons eat anything, washed or unwashed, that they can get their hands on — which can be child's play for these prehensile creatures.

Their long sensitive paws are as adept as a monkey's, and with an ingenuity that enables them at times to outsmart humans, raccoons can lift off boulders to open garbage can lids, neatly remove food from traps, unfasten unlocked door locks and swing open doors. Recently a Natural Resource Officer in Fitchburg responded to a call at 4:00 A.M. from a distraught woman living in a third-floor apartment: she had discovered a raccoon in her pantry calmly chewing on a roast beef she had cooked.

State Law Enforcement Officials also attribute the increase of raccoon population to various state and local laws and ordinances. Raccoons are protected by a limited hunting season and the fact that until recently, raccoon pelts fetched a poor market price. Moreover, whereas in rural areas — where hunting and trapping is common and homeowners can take advantage of a state law allowing them to destroy animals responsible for property damage — in urban areas, the raccoon's two natural predators, dogs and man, are restrained both by local leash laws and ordinances against hunting and trapping within city limits.

Photo Credit: Division of Fisheries & Game

More subtle, but perhaps one of the most important reasons accounting for the protection of raccoons, are urban attitudes. In rural areas, farmers know that after the woodchuck, the raccoon is the greatest destroyer of crops in the state, particularly of vegetable crops and sweet corn, its favorite food. So farmers simply go out and shoot or trap them.

But suburbanites are a different breed. Swayed by conservation attitudes against killing wild animals and attracted to the raccoon's seeming amiability (an image fostered in no small part by countless Disney-like characterizations of the animal), urban people wouldn't think of molesting those cute little creatures. Take for example, a case in Springfield. Scheduled destruction of a brewery there was delayed by a sympathetic demolition crew until two raccoons, evidently in the building in search of mash, were gently removed from the premises.

But watch out! While raccoons may appear to be appealing pets, they will, almost without exception, turn vicious, lashing out with claws and biting with sharp teeth when enraged. Full-grown raccoons, which weigh about 25 pounds, can mangle a small dog. Recently the Newton Police Chief issued a warning to residents to beware of raccoons after three children were bitten by the animals. What's more, it is against Massachusetts Law to take a raccoon from the wild.

State Law Enforcement officers and Fish and Game officials frankly admit they just don't have the personnel to follow up raccoon complaints. They advise those people with raccoon problems to call their local police or animal protection group for assistance in removing the animals.

To prevent damage, officials advise homeowners to sprinkle naphthalene flakes around sunken garbage cans or fasten screen door springs on garbage can lids to keep raccoons away. Raccoons in the chimney should be smoked out and then a mesh put over the opening to prevent further habitation. Diseased animals should be reported to local police to be shot.

Obviously, these measures will do little to reduce the general raccoon explosion. Much more effective are the natural controls like the cyclic outbreak of viral disease now knocking down the population. As in most cases nature has a way of working out its own problems.

RESOURCE
Published by
MASSACHUSETTS DEPARTMENT
OF NATURAL RESOURCES,
DIVISION OF CONSERVATION SERVICES
Leverett Saltonstall Building
100 Cambridge Street
Boston, Mass. 02202

DAVID KALES, Editor
LORRAINE A. AGRI, Graphics Coordinator
JACK WOOLNER, Photographer
JAMES E. HEALEY, Information & Publicity
JULIE GUINN, Reporter